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A Presidential Address

ON

REFLECTIONS SUGGESTED BY THE NEW THEORY OF MATTER.

Delivered before the British Association for the Advancement of Science at Cambridge on August 17th, 1904.

BY THE RIGHT HON. A. J. BALFOUR, D.C.L., LL.D., M.P., F.R.S.,

FIRST LORD OF THE TREASURY AND CHANCELLOR OF THE UNIVERSITY OF EDINBURGH.

[Mr. Balfour commenced his address by remarking that since the British Association exists for the advancement of science it is well that now and again the place of gathering should be in some spot where science rather than its applications, knowledge, not utility, are the ends to which research is primarily directed and, that being so, surely no happier selection could have been made than the quiet courts of the ancient University, where "we tread the classic ground of physical discovery." After referring to "the illustrious line of physicists who have learned or taught within a few hundred yards of this building—a line stretching from Newton in the seventeenth century, through Cavendish in the eighteenth, through Young, Stokes, and Maxwell in the nineteenth, through Kelvin who embodies an epoch in himself, down to Rayleigh, Larmor, J. J. Thomson, and the scientific school centred in the Cavendish Laboratory," he proceeded:]

Now, what is the task which these men and their illustrious fellow-labourers out of all lands have set themselves to accomplish? To what end have led the "new and fruitful physical conceptions" which they have founded? It is often described as the discovery of the "laws connecting phenomena." But this is certainly a misleading and, in my opinion, a very inadequate account of the subject. To begin with, it is not only inconvenient but confusing to describe as "phenomena" things which do not appear, which never have appeared, and which never can appear to beings so poorly provided as ourselves with the apparatus of sense perception. But apart from this, which is a linguistic error too deeply rooted to be easily exterminated, is it not most accurate in substance to say that a knowledge of Nature's laws is all we seek when investigating Nature? The physicist looks for something more than what by any stretch of language can be described as "co-existences" and "sequences" between so-called "phenomena." He seeks for something deeper than the laws connecting possible objects of experience. His object is physical reality—a reality which may or may not be capable of direct perception; a reality which is in any case independent of it; a reality which constitutes the permanent mechanism of that physical universe with which our immediate empirical connexion is so slight and so deceptive. That such a reality exists, though philosophers have doubted, is the unalterable faith of science; and were that faith *per impossibile* to perish under the assaults of critical speculation science, as men of science usually conceive it, would perish likewise. If this be so, if one of the tasks of science and, more particularly of physics, is to frame a conception of the physical universe in its inner reality, then any attempt to compare the different modes in which, at different epochs of scientific development, this intellectual picture has been drawn cannot fail to suggest questions of the deepest interest. True, I am precluded from dealing with such of these questions as are purely philosophical by the character of this occasion and with such of them as are purely scientific by my own incompetence. But some there may be sufficiently near the dividing line to induce the specialists who rule by right on either side of it to view with forgiving eyes any trespasses into their legitimate domain which I may be tempted during the next few minutes to commit. Let me then endeavour to compare the outlines of two such pictures, of which the first may be taken to represent the views prevalent towards the end of the eighteenth century, a little more than a hundred years from the publication of Newton's "Principia" and, roughly speaking, about midway between that epoch-making date and the present moment. I suppose that if at that period the average man of science had been asked to sketch his general conception of the physical universe he would probably have said that it essentially consisted of various sorts of ponderable matter, scattered in different combinations through space, exhibiting most varied aspects under the influence of chemical affinity and temperature, but through every metamorphosis obedient to the laws of motion, always retaining its mass unchanged, and exercising at all distances a force of attraction on other material masses according to a simple law. To this ponderable matter he would (in spite of Rumford) have probably added the so-called "imponderable" heat, then often ranked among the elements, together with the two "electrical fluids" and the corpuscular emanation supposed to constitute light. In the universe as thus conceived the most important forms of action between its constituents was action at a distance; the principle of the conservation of energy was, in any general form, undreamed of; electricity and magnetism, though already the subjects of important investigation, played no great part in the Whole of things; nor was a diffused ether required to complete the machinery of the universe.

Within a few months, however, of the date assigned for these deliverances of our hypothetical physicist came an addition to this general conception of the world, destined profoundly to modify it. About 100 years ago Young opened, or re-opened, the great controversy which finally established the undulatory theory of light and with it a belief in an interstellar medium by which undulations could be conveyed. But this discovery involved much more than the substitution of a theory of light which was consistent with the facts for one which was not, since here was the first authentic introduction[1] into the scientific world-picture of a new and prodigious constituent—a constituent which has altered, and is still altering, the whole balance (so to speak) of the composition. Unending space, thinly strewn with suns and satellites, made or in the making, supplied sufficient material for the mechanism of the heavens as conceived by Laplace. Unending space filled with a continuous medium was a very different affair and gave promise of strange developments. It could not be supposed that the ether, if its reality were once admitted, existed only to convey through interstellar regions the vibrations which happen to stimulate the optic nerve of man. Invented originally to fulfil this function, to this it could never be confined. And accordingly, as everyone now knows, things which, from the point of view of sense perception, are as distinct as light and radiant heat and things to which sense perception makes no response like the electric waves of wireless telegraphy,[2] intrinsically differ, not in kind, but in magnitude alone. This, however, is not all or nearly all. If we jump over the century which separates 1804 from 1904 and attempt to give in outline the world picture as it now presents itself to some leaders of contemporary speculation we shall find that in the interval it has been modified, not merely by such far-reaching discoveries as the atomic and molecular composition of ordinary matter, the kinetic theory of gases, and the laws of the conservation and dissipation of energy, but by the more and more important part which electricity and the ether occupy in any representation of ultimate physical reality. Electricity was no more to the natural philosophers in the year 1700 than the hidden cause of an insignificant phenomenon.[3] It was known, and had long been known, that such things as amber and glass could be made to attract light objects brought into their neighbourhood, yet it was about 50 years before the effects of electricity were perceived in the thunderstorm. It was about 100 years before it was detected in the form of a current. It was about 120 years before it was connected with magnetism; about 170 years before it was connected with light and ethereal radiation.

But to-day there are those who regard gross matter, the matter of everyday experience, as the mere appearance of which electricity is the physical basis: who think that the elementary atom of the chemist, itself far beyond the limits of direct perception, is but a connected system of monads or sub-atoms which are not electrified matter but are electricity itself; that these systems differ in the number of monads which they contain, in their arrangement, and in

[1] The hypothesis of an ether was, of course, not new. But before Young and Fresnel it cannot be said to have been established.

[2] First known through the theoretical work of Maxwell and the experiments of Hertz.

[3] The modern history of electricity begins with Gilbert, but I have throughout confined my observations to the post-Newtonian period.

their motion relative to each other and to the ether; that on these differences, and on these differences alone, depend the various qualities of what have hitherto been regarded as indivisible and elementary atoms; and that while in most cases these atomic systems may retain their equilibrium for periods which, compared with such astronomical processes as the cooling of a sun, may seem almost eternal, they are not less obedient to the law of change than the everlasting heavens themselves.

But if gross matter be a grouping of atoms, and if atoms be systems of electrical monads, what are these electrical monads? It may be that, as Professor Larmor has suggested, they are but a modification of the universal ether, a modification roughly comparable to a knot in a medium which is inextensible, incompressible, and continuous. But whether this final unification be accepted or not, it is certain that these monads cannot be considered apart from the ether. It is on their interaction with the ether that their qualities depend and without the ether an electric theory of matter is impossible. Surely we have here a very extraordinary revolution. Two centuries ago electricity seemed but a scientific toy. It is now thought by many to constitute the reality of which matter is but the sensible expression. It is but a century ago that the title of an ether to a place among the constituents of the universe was authentically established. It seems possible now that it may be the stuff out of which that universe is wholly built.

[After referring to the origin and development of suns and the gradual dissipation of the energy which during this process of concentration has largely taken the form of light and radiant heat Mr. Balfour proceeded:]

My present purpose requires me to do no more than observe that, be the theory of the primary and secondary qualities of matter good or bad, it is the one on which science has in the main proceeded. It was with matter thus conceived that Newton experimented. To it he applied his laws of motion; of it he predicated universal gravitation. Nor was the case greatly altered when science became as much preoccupied with the movements of molecules as it was with those of planets. For molecules and atoms, whatever else might be said of them, were at least pieces of matter, and, like other pieces of matter, possessed those "primary" qualities supposed to be characteristic of all matter, whether found in large masses or in small. But the electric theory which we have been considering carries us into a new region altogether. It does not confine itself to accounting for the secondary qualities by the primary or the behaviour of matter in bulk by the behaviour of matter in atoms; it analyses matter, whether molar or molecular, into something which is not matter at all. The atom is now no more than the relatively vast theatre of operations in which minute monads perform their orderly evolutions, while the monads themselves are not regarded as units of matter but as units of electricity, so that matter is not merely explained but is explained away. Now the point to which I desire to call attention is not to be sought in the great divergence between matter as thus conceived by the physicist and matter as the ordinary man supposes himself to know it, between matter as it is perceived and matter as it really is, but to the fact that the first of these two quite inconsistent views is wholly based on the second. This is surely something of a paradox. We claim to found all our scientific opinions on experience; and the experience on which we found our theories of the physical universe is our *sense perception* of that universe. That *is* experience; and in this region of belief there is no other. Yet the conclusions which thus profess to be entirely founded upon experience are to all appearance fundamentally opposed to it; our knowledge of reality is based upon illusion, and the very conceptions we use in describing it to others, or in thinking of it ourselves, are abstracted from anthropomorphic fancies which science forbids us to believe and Nature compels us to employ. We here touch the fringe of a series of problems with which inductive logic ought to deal, but which that most unsatisfactory branch of philosophy has systematically ignored. This is no fault of men of science. They are occupied in the task of making discoveries, not in that of analysing the fundamental presuppositions which the very possibility of making discoveries implies. Neither is it the fault of transcendental metaphysicians. Their speculations flourish on a different level of thought; their interest in a philosophy of nature is lukewarm; and howsoever the questions in which they are chiefly concerned be answered it is by no means certain that the answers will leave the humbler difficulties at which I have hinted either nearer to, or further from, a solution. But though men of science and idealists stand acquitted the same can hardly be said of empirical philosophers. So far from solving the problem they seem scarcely to have understood that there was a problem to be solved. Led astray by a misconception to which I have already referred, believing that science was concerned only with (so-called) "phenomena," that it had done all that it could be asked to do if it accounted for the sequence of our individual sensations, that it was concerned only with the "laws of Nature" and not with the inner character of the physical reality; disbelieving, indeed, that any such physical reality does in truth exist; it has never felt called upon seriously to consider what are the actual methods by which science attains its results and how those methods are to be justified. If anyone, for example, will take up Mill's logic, with its "sequences and coexistences between phenomena," its "method of difference," its "method of agreement," and the rest; if he will then compare the actual doctrines of science with this version of the mode in which those doctrines have been arrived at he will soon be convinced of the exceedingly thin intellectual fare which has been hitherto served out to us under the imposing title of Inductive Theory. There is an added emphasis given to these reflections by a train of thought which has long interested me, though I acknowledge that it never seems to have interested anyone else. Observe, then, that in order of logic sense perceptions supply the premisses from which we draw all our knowledge of the physical world. It is they which tell us there *is* a physical world; it is on their authority that we learn its character. But in order of causation they are effects due (in part) to the constitution of our organs of sense. What we see depends, not merely on what there is to be seen, but on our eyes. What we hear depends not merely on what there is to hear, but on our ears. Now, eyes and ears, and all the mechanism of perception, have, as we know, been evolved in us and our brute progenitors by the slow operation of natural selection. And what is true of sense perception is, of course, also true of the intellectual powers which enable us to erect upon the frail and narrow platform which sense perception provides the proud fabric of the sciences. Now natural selection only works through utility. It encourages aptitudes useful to their possessor or his species in the struggle for existence, and, for a similar reason, it is apt to discourage useless aptitudes, however interesting they may be from other points of view, because, being useless, they are probably burdensome.

But it is certain that our powers of sense perception and of calculation were fully developed ages before they were effectively employed in searching out the secrets of physical reality—for our discoveries in this field are the triumphs but of yesterday. The blind forces of natural selection, which so admirably simulate design when they are providing for a present need, possess no power of prevision and could never, except by accident, have endowed mankind, while in the making, with a physiological or mental outfit adapted to the higher physical investigations. So far as natural science can tell us every quality of sense or intellect which does not help us to fight, to eat, and to bring up children is but a by-product of the qualities which do. Our organs of sense perception were not given us for purposes of research, nor was it to aid us in meting out the heavens or dividing the atom that our powers of calculation and analysis were evolved from the rudimentary instincts of the animal. It is presumably due to these circumstances that the beliefs of all mankind about the material surroundings in which it dwells are not only imperfect but fundamentally wrong. It may seem singular that down to, say, five years ago our race has, without exception, lived and died in a world of illusions and that its illusions, or those with which we are here alone concerned, have not been about things remote or abstract, things transcendental or divine, but about what men see and handle, about those "plain matters of fact" among which common-sense daily moves with its most confident step and most self-satisfied smile. Presumably, however, this is either because too direct a vision of physical reality was a hindrance, not a help, in the struggle for existence, because falsehood was more useful than truth, or else because with so imperfect a material as living tissue no better results could be attained. But if this conclusion be accepted its consequences extend to other organs of knowledge besides those of perception. Not merely the senses, but the intellect,

must be judged by it and it is hard to see why evolution, which has so lamentably failed to produce trustworthy instruments for obtaining the raw material of experience, should be credited with a larger measure of success in its provision of the physiological arrangements which condition reason in its endeavours to turn experience to account. Considerations like these, unless I have compressed them beyond the limits of intelligibility, do undoubtedly suggest a certain inevitable incoherence in any general scheme of thought which is built out of materials provided by natural science alone. Extend the boundaries of knowledge as you may; draw how you will the picture of the universe; reduce its infinite variety to the modes of a single space-filling ether; retrace its history to the birth of existing atoms; show how under the pressure of gravitation they became concentrated into nebulæ, into suns, and all the host of heaven; how, at least in one small planet, they combined to form organic compounds; how organic compounds became living things; how living things, developing along many different lines, gave birth at last to one superior race; how from this race arose, after many ages, a learned handful, who looked round on the world which thus blindly brought them into being, and judged it, and knew it for what it was:—perform, I say, all this and though you may indeed have attained to science in nowise will you have attained to a self-sufficing system of beliefs. One thing at least will remain, of which this long-drawn sequence of causes and effects gives no satisfying explanation—and that is knowledge itself. Natural science must ever regard knowledge as the product of irrational conditions, for in the last resort it knows no others. It must always regard knowledge as rational or else science itself disappears. In addition, therefore, to the difficulty of extracting from experience beliefs which experience contradicts, we are confronted with the difficulty of harmonising the pedigree of our beliefs with their title to authority. The more successful we are in explaining their origin the more doubt we cast on their validity. The more imposing seems the scheme of what we know, the more difficult it is to discover by what ultimate criteria we claim to know it. Here, however, we touch the frontier beyond which physical science possesses no jurisdiction. If the obscure and difficult region which lies beyond is to be surveyed and made accessible, philosophy, not science, must undertake the task. It is no business of this society. We meet here to promote the cause of knowledge in one of its great divisions; we shall not help it by confusing the limits which usefully separate one division from another. It may, perhaps, be thought that I have disregarded my own precept, that I have wilfully overstepped the ample bounds within which the searchers into nature carry on their labours. If it be so, I can only beg your forgiveness. My first desire has been to rouse in those who, like myself, are no specialists in physics the same absorbing interest which I feel in what is surely the most far-reaching speculation about the physical universe which has ever claimed experimental support, and if in so doing I have been tempted to hint my own personal opinion that as natural science grows it leans more, not less, upon an idealistic interpretation of the universe even those who least agree may, perhaps, be prepared to pardon.

ROYAL CORNWALL INFIRMARY, TRURO.—The 105th annual report of this institution, which has just been issued, states that 392 in-patients were admitted during 1903, being seven less than in the previous year. The out-patients numbered 876, as compared with 937 in 1902. The average daily number of in-patients was 35, the average stay of each being 33 days. The cost per bed per annum was £58 16*s.* 11*d.*, an increase of over £4 as compared with the preceding year. The financial statement showed that the income was £2014 and the expenditure £2059.

ENTERIC FEVER AT TREGANTLE FORT, PLYMOUTH.—At the meeting of the St. Germans rural district council held on July 29th the deputy medical officer of health reported that five cases of enteric fever had occurred at Tregantle Fort. On visiting the farm at Kingdon, the proprietor of which supplies the fort with milk and also has the contract for removing sewage from the fort, the deputy medical officer found large quantities of sewage lying in the yard in close proximity to the dairy. He further discovered that the casks in which the sewage was removed were cleansed at the same well as the dairy utensils.

A Post-Graduate Lecture

ON

THE PATHOLOGY AND TREATMENT OF THE HERNIÆ OF CHILDREN AND THEIR RELATION TO CONDITIONS IN THE ADULT.

Delivered at the Hospital for Sick Children, Great Ormond-street,

BY EDRED M. CORNER, M.B., B.Sc. LOND., F.R.C.S. ENG.,

SURGEON IN CHARGE OF OUT-PATIENTS TO ST. THOMAS'S HOSPITAL AND ASSISTANT SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; ERASMUS WILSON LECTURER TO THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

GENTLEMEN,—In selecting a subject for this lecture I have been desirous of bringing to your notice some points in connexion with some common disorder such as may be seen and tested almost on every day of practice. One of the most frequent ailments seen in the out-patient department has been taken for the material of this lecture. An endeavour has been made to throw light upon the origination, the treatment, and the after-effects upon adults. In this way I hope to convince you that childhood is the time when an operation has the best chance of curing a hernia, as then, and then only, is the surgeon's skill aided by nature in the subsequent growth of the subject. Childhood is the period when we may hope to do a little more than "put back the hands of the clock." We may be able to do a good deal towards the local "winding up again of that clock."

Amongst the out-patients who attend the practice of a hospital for children there are a large number of cases of hernia and so I have selected this opportunity of bringing before you several points of interest in their pathology and treatment which are largely new. It requires but little discrimination to see that there are two great factors in the production of herniæ in children. One, a predisposing condition, is a congenital malformation by means of which the tunica vaginalis of the testis and the peritoneal cavity remain in communication with each other, the so-called congenital sac, consequently allowing the easy descent of such abdominal viscera as can migrate. The second factor, the one which actively produces the hernia, is the association of herniæ in children with gastro-enteritis, or better, gastro-intestinal fermentation with the production of gas, the consequent distension of the abdomen and the increase of intra-abdominal pressure. As a result the weaker parts of the abdominal wall yield, one or more hernial protrusions appearing. It is quite common to see multiple herniæ in children, such as inguinal and umbilical, which are the consequences of this distension. The large hyper-resonant abdomen and the multiplicity of the results obviously point to the general rather than the local character of the method of the origination of these protrusions. The presence of rickets, the passage of offensive stools, &c., indicate the incapacity of the child to digest its food, whether the fault lies with the child, the food, or both.

THE HERNIÆ AND HYDROCELES OF CHILDREN.

In order to illustrate the relative importance of these two factors, the predisposing or passive and the active, I wish to call your attention to the following points. The first deals with respect to the very great frequency of the presence of a communication between the tunica vaginalis and the peritoneal cavity—i.e., the congenital hernia sac—which exists in the condition recognised as hydroceles in children (see Fig. 1). Careful inquiry or the direction of the mother's attention will reveal the fact that the hydrocele is less tense in the morning than it is at night—that is to say, after the child has been lying quietly and some of the fluid has found its way through a communication from the tunica vaginalis to the peritoneal cavity, the scrotal swelling becomes slack. And, again, the more frequently and carefully this communication is looked for during the course of an operation the more frequently it

is found. The presence of this strait or neck can be demonstrated, as a distinct thickening in the cord of that side, in the out-patient room.

Yet again, recent herniæ in adults are found to have congenital sacs. Therefore, the presence of a communication between the tunica vaginalis and the peritoneum alone is insufficient to cause the formation of a hernia. It would therefore seem, as would be expected, that the increase of

FIG. 1.

A, Congenital hernial sac. B, Acquired hernial sac. C, Infantile hydrocele. T, Testicle.

intra-abdominal pressure, the active factor, is more important than the predisposing malformation. Again, when operating on the herniæ of young children the observer cannot but be impressed by the frequency of the occurrence of sacs of acquired or recent origin—i.e., unconnected with the tunica vaginalis. These considerations have led me to place the greatest importance on the gastro-intestinal fermentation in the causation and the production of herniæ in children and to look upon congenital malformations of the tunica vaginalis as merely important conditions predisposing thereto. Upon this view the importance of dietetics for the prevention of gastro-intestinal disturbances is still further emphasised. The relation of these infantile hydroceles to herniæ and gastro-intestinal troubles is one of the greatest importance, the result casting a lurid light upon the rationale of painting the scrotum with discutients in order to cure imperfections of digestion and the hernia sac of the hydrocele. Some observers have demonstrated the existence of fluid in the abdomina of children the subjects of hydroceles. The fact that these hydroceles are in hernia sacs, potentially so if they have never actually contained an abdominal viscus, demands that the treatment should be that of herniæ, which will be mentioned later, and demonstrates the utter futility of scrotal discutients.

HERNIÆ AND PHIMOSIS.

To students of text-books and recent monographs it will be at once apparent that no notice as yet has been taken of the almost universal and the most popular notion of the importance of phimosis in the causation of the herniæ of children. That such may be the case in some instances cannot be denied. But I have rarely seen a case in which I could satisfy myself that such was in reality true. The urinary opening in the prepuce is rarely so small as to be of such paramount importance. Also, in such a condition the prepuce itself would become ballooned and distended with urine during the act of micturition. Such a phenomenon would hardly be unnoticed by the mothers. Yet I have never been able to obtain such a history. Hence, with regard to the importance of phimosis in hernia production, it may be affirmed that, from the evidence before us, the prepuce is a much maligned structure and the operation of circumcision in this connexion one which raises false hopes. The operation by itself is certainly very rarely followed by any improvement in the condition of the hernia. Circumcision must be combined with other treatment, and though an operation and therefore of great importance in the eyes of the friends and the public, it should be pointed out that it is only of secondary value as compared with diet, medicine, &c. Doubtless this small operation is practised far more often than is necessary. In most cases it may be regarded in the light of a procedure of expediency rather than one of necessity. If more attention were paid it would be noticed that a small meatus urinarius in the small glans penis is very often associated with a tight prepuce and is the true cause of the child's straining during the act of micturition.

THE ADVANTAGES, DISADVANTAGES, AND THE VALUE OF TRUSSES.

To extend the above arguments further and so cover more fully the subject of hernia production in children it may be pointed out that it is the continuance or persistence of the increase of the intra-abdominal pressure, such as that arising from gastro-intestinal fermentation, which gives rise to the formation of a hernia rather than the sudden and more violent increments of pressure which arise from muscular efforts and strainings. In an adult the conditions seem rather to be reversed, as will be pointed out later.

The next point which I wish to bring before you is the curability of herniæ by means of a truss. The truss has long been a popular remedy for ruptures, and especially those of children. But it has not been made at all clear how this result is brought about. So far as can be ascertained it can cause matting of the tissues about the neck of the sac by means of the pressure which it exerts. And perhaps in a few instances it may also cause obliteration of the canal of the neck of the sac by means of the formation of peritoneal adhesions. The situation of these adhesions will be well below the level of the peritoneum and therefore will at best be comparable to the bad application of a ligature to the sac. Besides, by preventing the descent of abdominal viscera it will prevent further distension of the sac and enable natural growth to assist in, and perhaps perpetuate, the "cure."

The most popular truss for babies and young children is the one constructed out of a skein of wool. It requires but little experience of it to demonstrate the general inefficacy of this form of truss. Still, it is of some use. The pressure of this soft truss is quite insufficient to bring about the obliteration of the channel of communication in the neck of the sac. So that there can be no hope of curing the hernia by means of the formation of adhesions—that is to say, according to the ordinarily accepted method as delineated above. The second favourite is a spring truss which consists of a girdle and a pad, somewhat like those used on adults. There are two main objections to the use of this truss. First, the child is growing and the truss never fits for any length of time, having to be replaced by a new one. Secondly, as its pressure will be exerted on the structures of the spermatic cord as well as on the neck of the hernia, it will cause injury to the testis. Trusses used by adults occasionally give rise to orchitis in a subacute form; more commonly to fibrosis of the testis, which is the result of obstruction to the venous return. But the question assumes quite a different aspect when dealing with the interference with the blood-supply of a developing gland tissue such as that of the testis of a child. Orchitis, atrophy, and hardening by fibrosis, which will cause growth in the organ to cease, have been illustrated by cases among the out-patients. The importance to the individual of the testes before puberty has been strongly insisted upon in the lecture which I gave here in October, 1903.[1] And as the subject is one the importance of which has never been appreciated, it is yet again insisted upon. The value of the testes from the point of view of the continuance of the race lies in their capacity for spermatogenesis. But, especially for the individual, there is another factor—namely, the perfecting rather than the origination of the male characteristics, the so-called secondary sexual characters, such as the male form and strength of body, the beard and moustache, the voice, &c., which are supposed to need for their perfecting some internal secretion of the testicle. If one studies people with imperfectly descended testes the conclusion that one must come to is that the perfection of the male characters may be estimated by the amount of perfect testicular tissue present. Many surgeons have referred in a light vein to the apparent prodigality of nature in the presence of bilateral organs in the male when one will insure the perpetuation of the race. The whole question turns on the fact that the production of spermatozoa is but one of the functions of the testicle. It is the external secretion. It is a fact amply proved that the presence of one good testis will insure spermatogenesis, and a little further study will convince the observer that the early atrophy of one testis will lead to some imperfection of the male peculiarities, such as deficiency of the growth of hair on the face, the high-pitched voice, &c., and the earlier the age at which the atrophy occurs the more marked will be the deficiences. After puberty—i.e., when once these characters are developed—they seem to be more or less permanent, no matter the subsequent conditions of the testes.

From the above it will be seen that considerable evil may

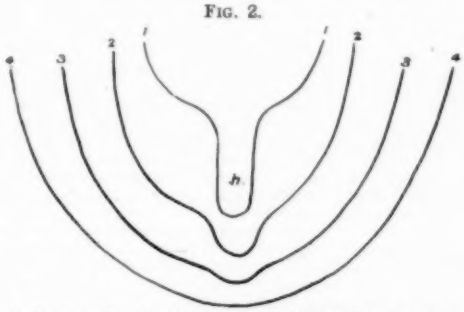
[1] Brit. Med. Jour., June 4th, 1904.

result to the individual from the application of a too forcible truss, on account of its interference with the blood-supply of the delicate tissue of the growing testis. This being so, it seems that it will be impossible to cure a hernia which has a congenital sac, that is to say, one in which the tunica vaginalis and the peritoneum are continuous, by means of a truss which will cause no injury to the testis, unless the natural separation of these structures which normally occurs before birth is merely belated. Yet it is known that a number of the herniæ in children disappear and are cured. What is the explanation?

From what has been said above it may be presumed that the herniæ which are cured have not congenital sacs, these being apparently incurable short of operation. And our experience at the operating table has already led us to believe that acquired sacs are a great deal more frequent in childhood than is supposed. It may therefore be suspected that the cases in which the hernia becomes cured are instances in which the sac has been of acquired origin. It is possible, though improbable, that these sacs can be cured by the obliteration of the neck of the sac by means of a truss, the pressure of which is such as not to injure the testis. But it struck me that there was another possible and probable explanation for this fact and one which was of more extensive application.

The acquired hernia sac of children is produced largely, if not entirely, by the increased abdominal pressure caused by gas formation due to fermentation in the intestines. When this fermentation subsides under treatment or otherwise the original cause of the protrusion ceases to exist. Now, as the child grows the concurrent increase in size and capacity of the body will lead to the retraction of the acquired hernia sac into the abdomen; in this way it may be pulled right up and the hernia cease to exist (see Fig. 2). The absence of a sac in the internal abdominal ring and the non-protrusion

FIG. 2.



To illustrate the retraction of *h*, an acquired hernial sac, during successive phases (1, 2, 3, 4) of the growth of the child.

of viscera will enable that ring to grow normally and correctly, the growth correcting the deformity which has resulted from the hernia, exactly as it does in the case of the curvatures of bones. It is, in the nature of things, not easy to bring forward positive or direct evidence in favour of this hypothesis, and I merely indicate the sources of evidence from which the conclusions was drawn.

1. I have seen the apparent complete disappearance of inguinal hernia in a child in which the testis was quite separate from the hernia; presumably, therefore, the sac was an acquired one. This I have seen occur in cases treated both with and without the use of a truss. Cure has been seen in both sexes.

2. I have operated upon a case, in which there has been a most distinct history of a hernia in childhood, without finding any trace of it. This case was that of a woman, between 25 and 30 years of age, who had been advised to undergo an operation on the supposition that a hernia was then present. No sign of its presence could be detected and operation was performed in order to satisfy the patient's mind. A careful examination at the operation yielded no trace of the presence of a sac in the inguinal canal. What had become of the sac? My contention is that growth had drawn it up into the abdomen. The descent of the bladder and the uterus into the pelvis, which are in the abdomen in the child, will also play some part in the natural reduction of a hernia in the female sex during the period of growth.

3. I have more than once operated upon the varicoceles of young men who had, so far as can be proved, a certain history of having had a hernia when children and at the operation no trace of the existence of a sac could be found. In these cases the hernia had only been present up to an early age and they contrast well with the following case, in which the hernia persisted for six or seven years.

4. In St. Thomas's Home I operated upon a man, aged 21 years, for the radical cure of an inguinal hernia which had appeared within the last few weeks. He gave a very definite history of having had a hernia in the same situation from the age of one year until between those of seven and eight—that is to say, for a period of between six and seven years. From this age until quite recently, for a period of 14 years, the rupture was "cured." Then a hernia of smaller dimensions, as far as its relations with the scrotum were concerned, made its appearance. At the operation the sac was thin and easily separated from the structures of the spermatic cord, showing all the evidences of its being of recent origin. It was of the acquired variety, having no connexion with the tunica vaginalis. There was no trace of the former sac. Where had it disappeared to?

The above cases offer some evidence in favour of the suggestion of the disappearance and retraction of acquired hernia sacs during the period of growth. But if my suggestion of the natural cure of acquired hernia sacs by these means is true a somewhat similar occurrence should take place when there is a congenital sac—that is to say, when the tunica vaginalis and the peritoneal cavity are in communication, so causing the late appearance of imperfect descent of the testis. Upon this I can say but little, but I have distinctly obtained the history that a boy's testicle was in its proper place when a baby, but later it had become imperfectly descended. It cannot be assumed that this was the natural result of growth, though I can add the further evidence that at the operation the imperfectly descended testis was accompanied by a congenital hernia sac. This distinctly suggests the explanation which has been offered, natural growth retracting into the abdomen the hernia sac, and at the same time offers another example of the new class of acquired or secondarily imperfectly descended testes.

If these views are accepted there must be a considerable modification of our methods of treatment. There are two main lines to be followed, as indicated in the passive or predisposing and the active agents in the formation of herniæ. In the first place, to deal with the great predisposing factor in the formation of herniæ in children, we cannot prevent the occurrence of congenital malformations. As trusses are likely to be useless in this instance, if not mischievous, nothing short of operation is likely to cure a hernia which has a congenital sac. It is the hernia with the acquired sac which offers more scope for success in non-operative treatment. The factor in the production of these is the active one—namely, the increase of intra-abdominal pressure due to gastro-intestinal fermentation. Hence the value of the diagnosis as to which sac is present. Naturally, the real treatment of the case should be relegated to the physician, as that of the surgeon consists of merely preventing the "hernia" coming down by the use of a woollen or other light truss and the recumbent position if necessary. By attention to the diet the physician can do a great deal towards both the cure and the prevention of herniæ. With an acquired sac the treatment must first consist of attention to diet, the administration of purgatives and other intestinal cleansing agents, combined with recumbency and the use of a truss of a light description. The public will have to be educated to the fact that herniæ in children may require rest in bed as much as do more acute and apparent illnesses. With the above treatment a considerable number of herniæ of children with acquired sacs can be cured in a natural manner by the growth of the child.

THE DEFORMITY OF THE INTERNAL ABDOMINAL RING CONSEQUENT UPON THE PRESENCE OF A HERNIA DURING CHILDHOOD.

The next question to be considered is, How long, and up to what age, shou'd this treatment be continued? To shed light upon this point a very interesting case can be brought forward which admirably illustrates the malformation of the internal abdominal ring which results from the prolonged presence within it of a hernia during the period of growth.

An athletic and strongly made man, aged 21 years, had had a rupture from the age of one year until between those

of seven and eight—that is to say, for a period of between six and seven years during the time of active growth of the body. For 14 years he remained quite cured and came to me at the age of 21 years on account of the recent appearance of a hernia at the same place. The size and the condition of the hernial sac confirmed the history of its recent origin and have been already detailed. The second stage of the operation, the suture of the internal abdominal ring, was not at all easy. It was this difficulty which attracted my attention to the condition. The shape of the hernial opening was more or less circular, whilst it should have been slit-like, allowing of valvular closure of the inguinal canal

FIG. 3.

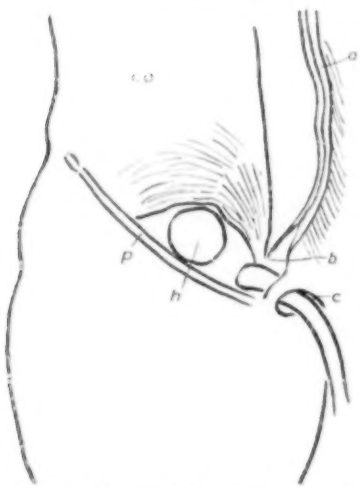


Illustration of the deformity of the internal abdominal ring caused by the presence of a hernia for 7 years during childhood—i.e., the period of growth. i. o., Internal oblique muscle. *a*, Flap of external oblique muscle. *b*, Conjoined tendon. *c*, External ring. *h*, Hernial orifice at internal ring. *p*, Poupart's ligament.

by the contraction of the abdominal muscles, which protective condition was in this instance impossible. And the fact that the patient had had 14 years of freedom from the rupture was entirely due to his naturally strong tissues rather than to any safeguarding mechanism of his inguinal canal. Considerable difficulty was experienced in effecting closure of the internal ring and a stronger silk than usual had to be used for it. The rest of the history of the case has been one of perfect success so far and only interests the patient, his friends and relatives, and myself, so that no more details will be given.

The great interest of this case lies in the interpretation of the deformity of the internal abdominal ring. The obvious suggestion is that it is dependent upon the presence of a hernia passing through it for a period of from six to seven years (see Fig. 3). The fact that the rupture occupied it would have prevented the ring from "growing straight." The relative growths of the internal abdominal ring and "the hole in it for the rupture" would be unequal, as the former would increase in size *pari passu* with the growth of the body, whilst the latter would become smaller until the hernia was "cured." At the time of the final disappearance of the hernia there would be left a relatively small hole within the internal abdominal ring, more or less circular in outline, perhaps with rather hard and unyielding edges. Consequently a distinction is made obvious between the internal abdominal ring and the aperture in it which serves for the passage of the hernia. This difference is not met with in the ordinary acquired herniæ of adults or in the congenital herniæ of young children. Correlated with this there is a development of a few fibres of the internal oblique attached to the part of Poupart's ligament below the limit of the usual origin of that muscle. The internal abdominal ring and the "aperture of the hernia" then seem to be the same.

Since this case I have operated upon a boy in the Hospital for Sick Children, Great Ormond-street, nearly eight years of age, who had inguinal hernia which had "not been properly cured since birth." At the operation he was found to have an acquired hernial sac, and there was a similar though naturally less marked deformity of his internal abdominal ring. On looking through my notes for cases in which difficulty had been encountered in suturing the internal abdominal ring I found another case in which there had been a persistent hernia during the period of growth. It would therefore seem that this malformation is quite well marked and in certain degrees may be easily recognised. The existence of such a malformation (which completely abolishes any valvular and protective action on the part of the muscles which enter into the formation of the inguinal canal) and its consequences, point very plainly to the fact that there should be a recognised limit to the non-operative treatment of hernia during the period of active growth before the deformity will have become permanent, as it is not right to continue a treatment which will lead to a permanent deformation of the internal abdominal ring and perhaps to the formation of a hernia later in life. There may also be mentioned from the surgeon's point of view, as later the case will be very likely to come into his hands, that there is the resulting difficulty in suturing the internal abdominal ring owing to the unyielding character of the margins of the hernial aperture, and therefore the performance of a satisfactory "radical cure" becomes difficult. The contemporaneous existence of a gross pathological process during the period of active growth and the consequent results of its action on the latter constitute a most important feature in the surgical diseases of children.

TREATMENT.

For the treatment of the herniæ of infants or children I would suggest the following lines:—

1. Treat with dieting, rest in bed if necessary, a light truss, and grey powder or the like, all herniæ up to the age of four or five years. The selection of this time is quite arbitrary and the proper age limit must be selected for each individual subject. Female children can naturally be treated with more effective trusses than male. Exceptions must be made of the following: (*a*) large or uncontrollable herniæ; (*b*) irreducible, perhaps difficult reducible or incarcerated, herniæ; and (*c*) strangulated herniæ. In these it is better not to delay operative procedures. Many of the difficult reducible herniæ of children are caused by the cæcum on the right side sliding into the hernia sac without a complete peritoneal investment. This condition is called hernia *en glissade*.

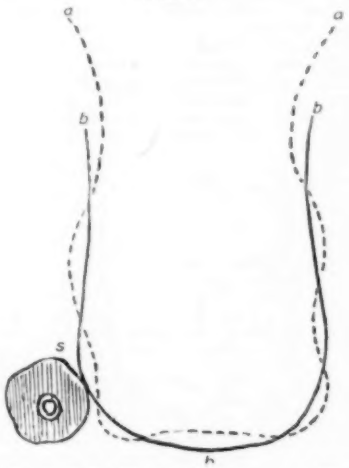
2. At the age of four years or thereabouts all herniæ of children should be submitted to operation unless there are special circumstances. Particular mention may be made of: (*a*) those with a congenital sac (the operation is now performed at the age of election); (*b*) those with an imperfectly descended testis; and (*c*) those which have been, and apparently will be, persistent in character.

It may be added that this age, four or thereabouts, has been selected as the least in the way of operative interference is then required, the internal abdominal ring will grow correctly afterwards, it is easier to perform the operation at this age than earlier, and finally, I believe that the most radical operation—i.e., with the best prognosis—can be done then which the subject's tissues will ever permit, nature, solely during the period of growth, aiding the process for cure. An eminent surgeon has claimed that the operation of cure for hernia merely puts back "the hands of the clock" as regards that condition. At the age for operation which is being advocated more can be done, as subsequent growth will aid in the cure and help to give permanence to the surgeon's work.

There are two points in the operation to which attention may be directed. The usual method of dealing with the sac is to strip it up and ligature the neck, after having divided it if a congenital one. Such a procedure is not without danger to the vas deferens and the spermatic veins such as might lead to results which may cause cessation of growth and development in the testicle. It is therefore not always advisable to adopt the ordinary method, and to meet the difficulty I have adopted the following measures. The sac is opened longitudinally and any contents therein are returned to the abdomen. A purse-string suture is carefully inserted, taking only the sac wall, as high up as is practicable. This is then tied occluding the opening of the sac. The hernia sac or the tunica vaginalis is left as widely open as possible. The question as to whether it is desirable or not

to open up the inguinal canal and suture the internal abdominal ring seems to depend upon the size and the persistence of the hernia and the age of the child. The larger the hernia, the longer the history of its presence, the older the child—all indicate the advisability of the suturing of the internal abdominal ring. It may be laid down that

FIG. 4.



Illustrating method of ligation of the sac. *a*, *a*, Represent ligature passed. *b*, *b*, *b*, The sac. *s* Is the spermatic cord.

when there is any doubt as to the performance of this step in the operation it had better be done. No harm but only good is likely to result locally.

RELATIONSHIP BETWEEN THE HERNIÆ OF CHILDREN AND ADULTS.

There must be some relation between the herniæ of adults and those of children. This is a subject about which there is as yet but little known. It is quite recognised that people who have had herniæ as children sometimes have a recurrence later in life, as was so in the case which has been quoted at some length in this lecture. Adults who have had hernia when young and who have no further trouble do not come under our observation and therefore we know far less about them. But this latter class must in reality be a fairly large one. One would expect that it would be mainly derived from those cases in which the hernia was present only in the early months of life, was only in evidence for a short time, and had an acquired sac. In point of fact, the earlier the appearance and the shorter the duration of the existence of a rupture the more likely it is to be cured by natural means.

As a contrast to these there are instances in which the hernia appeared late in childhood or persisted until that time. It is the persistence of the rupture which leads to the permanent deformity of the internal abdominal ring, a result which need never occur if only the hernia is treated actively by operation at an early age. And on this account it seems advisable that ruptures in children—i.e., during the period of active growth and before heavy muscular strains are indulged in—should not be left too long. For generations there has been a cry that surgery should aid nature. During childhood is the only time at which the surgeon has nature to help him in his attempts to cure herniæ. Hence it seems that this will be the time of life when the prognosis will be the best, and should be the age of election for the success of an operation. Throughout I would urge the advisability of the diagnosis being made between the congenital and the acquired sacs of herniæ. It seems more than doubtful if the former—congenital sacs—can ever be cured by any measures short of "division and ligature" of the sac; whilst, as has been pointed out, those with the acquired sacs have a very fair chance of being permanently cured by the purely natural means of healthy growth and should only be interfered with operatively for their persistence, their size and incontrollability, their developing acute symptoms, or for any special reasons, such as the presence of an imperfectly descended testis, &c.

To return to those herniæ which have congenital sacs. At pre-ent there is little evidence that the canal of the neck of the sac ever becomes obliterated by a natural process which has been delayed, such as that which normally occurs before birth. Personally, I firmly believe that such a belated natural process does occur, and for evidence of it I would instance the cure of the hydroceles of babies which originally have patent communications with the peritoneum. Of course, this is no direct proof, but it affords some basis upon which one can rest an act of philosophic faith. If this communication persists up to the "age of election," from four to five, the case of hydrocele had better be operated on just as if it was a hernia. Nor is it right to use a truss which exerts sufficient pressure on the neck of the sac to lead to its closure by means of the formation of peritoneal adhesions on account of the fact that the self-same pressure will act also on the nutrient vessels of the developing testis, and so cause such pathological changes as will hinder or entirely prevent the future perfecting of that organ.

There is yet another problem to which attention must be directed. Can the abdominal distension of a child if it persists exert any deleterious action upon the hernial regions during their growth, short of the actual formation of a hernia, which can predispose to such a development in the adult? Long-continued abdominal distension during the period of growth may bring about a lax and weakly condition of the region of the hernial rings. And I cannot help thinking that the seeds of future hernia formation are sown during infancy and childhood far more often than we suspect. We are all familiar with the large, loose, lax inguinal rings of adults so frequently found in which no definite herniæ are felt. How is it that these rings come to be so large? Is it because they are congenitally so? or is it that they are the result of persistent distension of the abdomen during childhood? There seems no doubt but that we must favour the latter hypothesis, though the former may be true in some rare instances. These large rings have a counterpart in the divarication of the recti so often seen in children with distended abdomina. Persistent abdominal distension in children will lead to the abolition of the protective valvular muscular arrangement of the inguinal canal, which condition may persist in adults and lead to the subsequent formation of herniæ.

It is to be hoped that the subject of the relationship which exists between persistent abdominal distension or the actual occurrence of hernia during infancy and childhood and the herniæ of adults has been clearly put before you so that the question may receive more attention in the future than it has done in the past. And let us hope that medicine and surgery in childhood will do much to abolish these complaints in the adult. It is curious, or better, unusual, that in a lecture on surgery medicine should be so strongly advocated. But anyone who attends upon our out-patient department will not be able to resist the conclusion that intestinal distension by the gases formed by fermentation is the most important factor in the actual production of a hernia in a child and, let us suggest, possibly also in the adult. A similar relation may, and probably does, exist between the hydrocele of a child and the hernia of the adult in a lesser degree.

To sum up, this lecture has been utilised to urge upon you the possibility, if not the fact, that if only more attention is paid to the diet and the persistence of abdominal distension of children, the advisability or not of operative interference for all herniæ in children which are persistent or of which the subjects are above the age of five years, the diagnosis between the acquired and congenital hernia sac, and active treatment adopted during childhood, far fewer adults will be handicapped by that common disadvantage—namely, a hernia.

UMBILICAL AND VENTRAL HERNIÆ.

Finally, before this lecture is concluded, reference must be made to the umbilical and ventral herniæ of children which illustrate admirably in a form which will be readily accepted many of the points, problems, and principles which I have advocated with inguinal herniæ. To begin with, the fact that these herniæ—umbilical and ventral—are correlated causally with persistent distension of the abdomen will be more readily agreed to than it is in the case of those in the inguinal region. Also, it is well recognised that if the distension is relieved and no visceral protrusions are allowed to occur these herniæ may be cured. And I think that people will be more ready to accept my suggestion

that the growth of the trunk retracts the peritoneal sac of the hernia within the abdomen and so "cures" the rupture in a natural way. The views put forward and derived from a study of inguinal herniæ, in point of fact, seem more likely to meet with acceptance in their application to the umbilical and ventral protrusions. In the latter situation the full force of the evil of the persistence of the hernia will be appreciated and also the necessity for operation before permanent deformity has been inflicted on the ring by the rupture. Likewise the natural cure and the restoration of the umbilical ring to its proper condition will meet with ready acceptance. It is merely necessary to point out that these herniæ exemplify all the points put forward in a previous section of the lecture. But it is advisable to point out one difference which umbilical herniæ exhibit. These ruptures are merely local manifestations of the effects of abdominal distension. The divarication of the recti muscles is another and one which always accompanies them, corresponding when alone to the large inguinal rings without herniæ, which, I have suggested, arise from abdominal distension and divarication in those situations. As a consequence, when operating for umbilical herniæ it is advisable to continue the suturing well above and below the navel, so as to do more than close merely the local manifestation.

ELECTROCUTION ON THE RAILWAY: THE DANGERS OF THE LIVE RAIL.

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RECENTLY the attention of the public has been directed to the dangers of electric traction by the loss of life, human or other, that has been taking place upon our railways. Within the last few weeks the danger of the live rail has been made the occasion of questions in the House of Commons. On the Southport railway a short while ago a man met with his death through stepping upon the elevated rail; in the neighbourhood of Newcastle-upon-Tyne one child, three men, and numerous dogs have been killed by contact with the dangerous rail; while in other instances severe injuries have been received and death just averted as in the case about to be reported. There is not the least doubt as to the great advantages of electric traction upon the railway as a rapid and pleasant means of transport and few of us would like to see it altered, but it is quite apparent from the number of accidents which have already taken place that a sufficient protection is not afforded the public against its dangers. People will cross railway lines and animals will stray on to them. As the accidents just mentioned occurred in broad daylight, when people had all their senses to guide them, it is painful to contemplate what may be the dangers to human life during the long winter nights unless additional means are taken to inclose the elevated rail. It is no excuse on the part of a railway company to say that the people who met with their death thus on the railway were trespassing, for all the men who were killed were not guilty of this offence. In two instances the men, one of whom was provided with special boots, were railway servants, and even in cases where it is admitted that the victims were trespassers no such plea as that put forward by a railway company can altogether condone the fatal result since death is surely not, humanly speaking, the penalty of trespassing.

For the opportunity of publishing the notes of the following case I am indebted to Dr. R. A. Wilson of Wallsend, with whom I have seen the patient on two occasions.

On the afternoon of June 13th, 1904, rather a wet day, a man, aged 37 years, in crossing the line at Wallsend tripped upon the ordinary line and falling upon the current rail he struck the back and right side of his head. He was immediately rendered insensible. As the accident was seen by one of the railway servants this man at once put on india-rubber gloves and running to the rescue of the patient he pulled him off the track. The injured man was extremely rigid; his mouth was clenched and had to be opened forcibly by means of a piece of wood. Five or six minutes after the accident Dr. Wilson, who lives in the immediate vicinity, was on the spot. The man was then lying on the side of the railway; he was unconscious and was the subject of general convulsions. His jaws were firmly clenched; his eyes were fixed and staring, pupils normal and equal. The respiration was quickened but not deep. In the urgency of the moment the condition of the pulse was not registered. Artificial respiration, which had been begun, was maintained. For fully half an hour the patient remained in a state of unconsciousness, then there was a slight recovery followed by a relapse and a recommencement of the convulsions. Meanwhile a stretcher was procured. On the way to the man's home the convulsive movements were so severe that he frequently all but fell out of the ambulance. When the patient came to himself one and a half hours later there was complete anæsthesia; he had no feeling in any part of his body. As sensation returned his feelings were at first unpleasant. He complained of "pins and needles" all over him; this lasted for ten minutes. He was not sick but he felt dizzy and strange. Two hours after the accident he complained of pain in the right foot. On removing the boot the upper surface of the large toe and of that adjoining it was seen to be blistered; it was also red and angry looking. A large blister was also noticed on the heel. There was no difficulty with the bladder or rectum.

Two days afterwards when I saw him with Dr. Wilson he was fairly well in himself but the right foot showed signs of extensive burning. Both the upper and under surfaces of the big toe and of the two adjoining toes were blistered and vividly red round the edges. There was a superficial ulcer stretching for fully one inch across the sole of the foot just behind the toes, while towards the heel there was a blister three inches by two and a half, with red and swollen borders and extremely tender to the touch. A small burn with tender edges was also found on the back of the elbow, while over the upper part of the occipital bone there was a hard caked mass of blistered skin and incrusted exudation two inches in diameter and surrounded by a circle of superficial ulceration. The main features at this stage were the burnt appearance of the wounds—they looked angry and seemed as if they would slough (Fig. 1). It is interesting to

FIG. 1.

Burn on the heel and the under surface of the toes, the result of contact with "live rail." The appearances are those of a red angry-looking burn with considerable reactive inflammation in its neighbourhood. The tissues look as if they would slough. Photograph taken five days after the injury.

know in connexion with the extensive burns to the foot that the boot which the man was wearing at the time of the accident was not injured at all. I examined the boot carefully but it betrayed no sign whatever of having been the medium through which the electric current had passed nor did the stocking show the slightest mark. The urine was free from albumin and sugar.

When seen again with Dr. Wilson on July 10th the wounds, instead of having made progress towards healing, looked worse. The ulcers were deeper and there was no healthy reaction on the part of the surrounding tissues. The under surface of the big toe looked as if it had been split open; the tissues were swollen and the exposed bone seemed as if it would necrose (Fig. 2). I was impressed by the great destruction of the tissues that had taken place and the absence of any attempt at healing nearly four weeks after the accident.

Electrical Currents and their Effects.

For the distribution of electricity into towns two kinds of currents are employed—the continuous and the alternating. The accidents produced by the two kinds of currents are not identical in all respects. The continuous current at high tension, coming into contact with the human body, causes burns and considerable disorganisation of the tissues. When the shock has been severe it nearly always causes death. With alternating currents burns also occur but they are usually less severe, while the destruction of the tissues is both less complete and not so widely diffused.

Experimental Evidence.

In 1885 Grange[1] reported two deaths from electric shock and made this circumstance the occasion for carrying out a series of experiments upon animals submitted to the influence of continuous currents. He attributed the death of animals thus dealt with to small hæmorrhages in the medulla oblongata, which he believed induced cessation of respiration and stoppage of the heart's action through excitation of the vagal centres. D'Arsonval, in a report presented to the Academy of Sciences in 1887, pointed out that electricity acted in two different ways—(1) by directly acting upon the tissues and destroying in an irremediable manner their physiological properties (*effets disruptifs*); and (2) by acting reflexly in an indirect manner and producing inhibition of the nerve centres which might or might not be of a fleeting character. In the latter case the main cause of death, he maintained, would be arrest of the breathing. At the Edison Laboratory, New York, experiments were carried out in 1889 by Brown, Kennelly, and Peterson[2] upon dogs, a horse, and two calves, the continuous and alternating currents being both employed. The alternating currents varied from 160 to 800 volts. These when applied for one second invariably caused death. The application of the continuous current, on the other hand, was not always lethal. Tatum,[3] in 1890, concluded from his experiments upon dogs that death was due to arrest of the heart's action. He demonstrated that neither the administration of atropine nor section of the pneumogastric nerves made the slightest difference, for when animals were exposed to a severe electric shock death still came through arrest of the heart's action. Tatum therefore attributed death in these circumstances to paralysis of the wall of the heart and not to any influence exercised by the current upon the nervous system.

In 1890 it was arranged by the legislature of the United States that criminals in that country were to be electrocuted by alternating currents of 1500 volts, from 15 to 30 cycles per second. In cases where the law was thus given effect to there was a general consensus of medical opinion that when the current was broken after a contact of several seconds the heart was found to be beating and that respiration re-established itself in such a manner as to oblige the executioner to make a fresh contact. In some of the criminals thus electrocuted Macdonald[4] found capillary hæmorrhages on the floor of the third and fourth ventricles of the brain but he admits that these lesions were not constant.

In 1896 Kratter[5] experimented upon a variety of animals with alternating currents and he came to the conclusion that death was due to paralysis of the respiratory centre and to asphyxia as a consequence. Kratter regarded as important elements the duration of the current and the kind of animal which he was employing. He found that guinea-pigs and rabbits resisted the shock better than dogs but on post-mortem examination no constant lesion was found. The blood was not altered nor did the nerve cells exhibit any appreciable change on microscopical examination.

[1] Annales d'Hygiène et de Médecine Légale, 1885.
[2] New York Medical Journal, March, 1889.
[3] Ibid., 1890.
[4] Ibid., May, 1892.
[5] Der Tod durch Electricität, Leipsic.

FIG. 2.

Injury (burn) to foot, the result of contact with "live rail." The ulcers are deep and are surrounded by very unhealthy tissues. There is no sign of healing. Photographed on July 11th, 1904, 28 days after the injury.

In 1897 when serving on the Dangerous Trades Committee of the Home Office, one of the risky occupations referred to that committee was employment in electrical generating stations. To do justice to the inquiry I felt that it was desirable that fresh light if possible should be thrown upon the cause of death in electric shock. Accordingly, with the assistance of Dr. R. A. Bolam, my colleague in the physiological department of the College of Medicine, I carried out a series of experiments upon animals. The paper embodying the results of these experiments was published in 1898.[6] The animals employed were dogs and rabbits and the anæsthetic used was ether. Both the blood pressure and respiratory movements were recorded. An alternating current supply in the laboratory running at 100 volts and 100 cycles per second was transformed as required. Wet sponge electrodes efficiently insulated were applied to the fore and hind limbs of the animals on portions of skin previously shaved and thoroughly moistened. We found that when animals were exposed to electric currents of sufficiently high potential, death, practically speaking, was instantaneous. The animal was thrown into a state of opisthotonos during which breathing was suspended; the heart's beat was momentarily quickened and then arrested, while with currents of somewhat higher potential still it was immediately arrested without any preliminary quickening. In most of our experiments the organ first affected was the heart. Sometimes the breathing was observed to continue rhythmically after the heart had ceased beating. Only in the case of very high voltages with currents considerably above the potential usually required to kill an animal was there simultaneous stoppage of the heart and respiration. We never succeeded in causing primary arrest of the respiration followed by failure of the heart nor did we find that there was any absolute relation between the voltage employed and the death of the animal. A smaller animal, for example, was not killed by a

[6] Brit. Med. Jour., Jan. 15th, 1898.

lower voltage than an animal twice its size. Frequently it was the reverse of this. Circumstances suggested to us that the younger and the less highly organised the animal the higher often was the potential required to kill it when compared with that needed for an older animal.

Prevost and Battelli[7] of Geneva found that alternating currents of feeble tension—e.g., 120 volts—caused fibrillary tremor of the heart and that it was this circumstance which dominated all the other phenomena. The action of the heart was arrested after contact of one second. Occasionally there was a generalised tetanus with opisthotonos followed by clonic convulsions. Prevost and Battelli divided electrical currents into high, medium, and low, rather an arbitrary division on the whole. In dogs receiving 240 volts for two seconds the heart presented fibrillary tremor and there was generalised tetanus followed by complete arrest of respiration; with 600 volts for two seconds there was fibrillary tremor of the heart with convulsions but no respiratory movement; while with currents ranging from 240 to 600 volts there was produced in dogs simultaneous arrest of heart and respiration. These observers found (1) that currents of low tension produced paralysis of the heart; (2) that mean tension currents produced simultaneously paralysis of the heart and respiration; and (3) that high-tension currents caused principally nervous symptoms. The particular part of the body at which the electric current enters is of importance. Arrest of breathing and the development of convulsions were induced by a smaller voltage when the electrodes were applied to the head. The mode of death from continuous currents they found to be in the main similar to that brought about by alternating currents; also that currents of 550 volts caused rapid fall of arterial pressure due to paralysis of the heart.

D'Arsonval held the view that the continuous current was only risky to life when the circuit was broken, but most observers while admitting that the shock is more dangerous when the circuit is broken, yet are of opinion that closure of the circuit is equally dangerous. Battelli found that there was no exact relationship between the electrical energy necessary to cause the death of an animal and its weight, yet maintained, contrary to most observers, that young animals are more sensitive to the effects of electricity than those of maturer age.

R. H. Cunningham[8] of New York from his experiments concluded that although during the passage of the electric current there is respiratory standstill, yet the respiratory centre in the medulla is neither paralysed nor instantly killed, otherwise no natural rhythmical respiratory movements could occur after the circuit is broken. He found that the currents affected principally the left wall of the heart. There was cessation of the heart's beat upon closure of the circuit. Currents of from 110 to 120 voltages readily killed dogs when passed for one minute 16 seconds from the head to the thorax. The currents were equally fatal when carried through the thorax by attaching the electrodes to the forearms, or one to the left forearm and the other over the heart. Cunningham found that young, well-nourished, and hardy dogs withstood a slightly greater strength of current through the chest for a longer time than ill-nourished or older dogs and that the minimum strength of current required to stop the heart of different dogs bore no definite ratio to their size and weight. "Besides the influence exerted by the quality, duration, strength, and density of the current there must be some other factor, apparently residing in the heart and probably physiological in nature, which exercises an influence in the readiness with which the cardiac effect is produced." An enfeebled state of health, for example, may increase the susceptibility of an animal to electrical shock. In cases where men have received severe but not lethal shocks there has usually been before consciousness is lost a moment or two during which strange sensations have been experienced, not necessarily of pain but as if the muscles were all drawn and a sensation of tremendous pressure felt across the chest. Owing to the severity of the muscular spasms a man falling upon the live rail might be thrown in one or other direction, thus breaking his connexion with the live contact.

Voltage Required to Kill.

Opinions are divided as to the voltage required to kill. The professor of electrical engineering at University College, London, Dr. J. Ambrose Fleming, tells us that at one time he thought it was only high voltages that killed. This opinion he no longer holds. The peculiar circumstances operating at the time must be taken into consideration. Men may not be killed on brief contact with 2000 volts while contact with 500 may prove fatal. Railways run at from 300 to 600 volts and this is allowed by the Board of Trade in the belief that it is not dangerous. Experience does not confirm this opinion, as contact with lower voltages has shown again and again. In a public bath in London a man recently lost his life by accidentally placing his hands upon the electric light wires in which the pressure was only 250 volts, the same as in private houses. In this case the danger was increased owing to the man's hands being wet. The risks to workmen on the railway are intensified during wet weather. To these men the danger lies in placing one foot on the live rail while the other is on earth. As Professor Fleming says, "You may stand on a live rail or even sit or lie on it. ..... There is no danger so long as you are entirely on the rail. If you could be absolutely insulated from the earth there is probably no pressure of current that would do you any harm. The danger comes when one part of you, especially a bare part such as the hand or face, touches the live rail and some other part is in contact with the earth. That is where the 'live' rail constitutes so grave a danger." With railway lines in the open country the danger is not alone that cattle or sheep may stray upon them, but that the animals may be electrocuted and their bodies falling upon the track may become the cause of an accident to the train that follows. If the lives of the travelling public are to be safeguarded there must be adequate covering of the elevated rail, not only at stations and level crossings, but along the whole length of the track. The manner in which this rail should be protected is a matter for electrical and railway engineers. Gloves made of indiarubber should be worn by men who are proceeding to rescue the victims of electrical shock on a railway, and on carefully removing these unfortunate persons from contact with the elevated rail artificial respiration should be at once resorted to in cases of suspended animation and maintained for a considerable length of time, for more than half an hour if necessary. Cunningham recommends transfusion of defibrinated blood as an accompaniment to artificial respiration. This method of treatment has been followed by good results in his hands but it is evidently more likely to be adopted and to prove more successful in the laboratory than on a railway line for example.

Newcastle-upon-Tyne.

[7] Journal de Physiologie et de Pathologie Générale, Paris, 1899.
[8] Cause of Death from Industrial Electric Currents, New York Medical Journal, 1899.

ON THE ACTION OF VENOMS OF DIFFERENT SPECIES OF POISONOUS SNAKES ON THE NERVOUS SYSTEM.

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II.—A FURTHER NOTE ON COBRA VENOM.

IN a former communication to THE LANCET[1] we described the histological appearances of the central nervous system in six monkeys and three rats paralysed with cobra venom. Since then we have examined in a similar manner the tissues of seven other monkeys and we wish to take this opportunity of putting our results on record. The first four monkeys may be considered as an addition to the series of six already published; but they were also examined with special reference to the action of cobra venom on nerve fibres, especially those in peripheral nerves. The three remaining monkeys were regeneration experiments—that is to say, they were first paralysed by subcutaneous injections of the venom but they subsequently recovered on the administration of an antivenom. The methods of fixing and staining in these seven cases were the same as noted in our former paper except with regard to the peripheral nerves,

[1] THE LANCET, Jan. 2nd, 1904, p. 20.

portions of which were fixed in Müller's fluid and other pieces in perchloride of mercury or formol. The nerves were stained by (1) theoin (for nuclei); (2) hæmatoxylin and benzo-purpurin (for axes cylinders and nuclei); (3) Congo red (for axes cylinders); and (4) Busch's method (for myelin). In the cases in which Busch's method of staining was employed the animals were kept on ice for 24 hours after death before the tissues were removed. The following are the details of the cases:—

—	Weight in grammes.	Dose per kilogramme.	Time before death.
		Milligrammes (subcutaneously).	
Monkey No. 7	2950	0·4	6 hours 30 minutes.
,, ,, 8	2560	0·4	5 ,, 40 ,,
,, ,, 9	9485	0·5	2 ,, 30 ,,
,, ,, 10	2710	0·5	1 ,, 30 ,,
,, ,, 11	3310	0·5	Paralysed in 2 hours 10 minutes; antivenom; recovery in 4½ hours; killed at once.
,, ,, 12	3930	0·5	Paralysed in 2 hours; antivenom; recovery in 6 hours; killed 20 hours later.
,, ,, 13	3210	0·45	Paralysed in 3 hours 40 minutes; antivenom; recovery in 3 hours; killed 44 hours later.

Monkey No. 7, weight 2950 grammes, died in six and a half hours after subcutaneous injection of 0·4 milligramme per kilogramme of cobra venom. Generally the degenerative changes in this case were even more marked than in Monkey No. 1 of our former series. In the cord there were, in the lateral groups of cells, some six to ten cells deeply stained, with chromatic granules still present and fairly consistent, though rather ill defined and lying in a somewhat diffusely stained plasma. The rest of the lateral cells and all the more central cells were devoid of granules and the majority were very pale, indeed typically "ghost" cells. Some few cells showed vacuolation. These degenerative changes seemed rather more marked in the lumbo-sacral than in the cervical region. In the cerebral cortex the appearances were similar to those in the cord, there being a proportion of the larger pyramidal cells deeply stained but with rather ill-defined granulation. The smaller ganglion cells were pale and quite devoid of granules. In the nuclei of the pons and medulla the proportion of almost normal cells was much more considerable. There seemed to be a slight increase of the connective-tissue (neuronophagen) cells throughout the grey matter of the cerebro-spinal system, especially round the smaller and paler ganglion cells. Sometimes these connective-tissue cells were found indenting the margin of the ganglion cell and sometimes even in its interior. With Busch's staining there was no appearance of degenerate fibres in cerebral or cerebellar cortices, or in the pons, medulla, or cord. The anterior and posterior nerve roots were likewise seen to be unaffected. The peripheral nerves examined were the median (near elbow), posterior tibial (portion between soleus and gastrocnemius muscles), and vagus (in cervical region). All of these seemed to show some slight increase of their internodal nuclei but this increase was by no means well marked. With Busch's staining there was no certain evidence of coagulation or breaking up of the myelin. There was some blackening of the fibres in places but this was probably an artefact due, at least in part, to the nerves lying rather long in formol. The axes cylinders were in places slightly swollen but not much more than was to be seen in the control sections; so that this appearance could not be regarded as pathological.

Monkey No. 8, weight 2560 grammes, died in five hours and 40 minutes after subcutaneous injection of 0·4 milligramme per kilogramme of cobra venom. The appearances in this case were much the same as in Monkey No. 7, though not quite so marked and not quite so uniform throughout the whole cerebro-spinal system. For instance, in the lumbo-sacral region of the cord the chromatolysis was just as extensive as Monkey No. 7, while in the cervical cord the number of the almost normal cells lying in the lateral groups was considerably greater. In the pons and medulla, too, excepting the cells of the third nucleus, which had their granules much fragmented, those in the optic nuclei, fifth, seventh, and twelfth were practically normal. With Busch's staining there was no reaction for degenerate fibres in any part of the cortex, pons, medulla, or cord. The appearances in the peripheral nerves were much the same as in Monkey No. 7—namely, slight increase of internodal nuclei with no certain evidence of change in the myelin or axes cylinders.

Monkey No. 9, weight 9485 grammes, received 0·25 milligramme per kilogramme of cobra venom. The day following the animal looked dull but there were no signs of paralysis. Three days later it was apparently quite well and was therefore again given 0·35 milligramme per kilogramme of the venom. It was again dull on the day following but with no signs of paralysis. A day later still it seemed quite well. 0·5 milligramme per kilogramme of the venom was then given and the animal died paralysed in two and a half hours. The microscopic appearances in this monkey were much the same as in Monkey No. 3 of our former series, also dead in two and a half hours after injection of the poison. At some levels of the cord the ganglion cells looked almost normal, while at others there seemed undoubted evidence of an early degenerative change. Taken as a whole, we may say that a definite proportion of the ganglion cells of the lateral groups were too diffusely stained and had their granules somewhat fragmented. Some cells, too, were rather deficient in granules, especially those cells in the more central groups. The ganglion cells in the nuclei of the pons and medulla seemed practically normal. In the cerebral cortex the ganglion cells were again rather diffusely stained with their Nissl bodies slightly broken up. There seemed in this case also some slight increase in the connective-tissue cells, though in the cord, at least, they did not seem so definitely collected round the ganglion cells, and they were not found indenting their edges nor yet in their interiors. With Busch's staining there was no reaction for degenerate fibres in the cortex, pons, medulla, or cord. The nerves showed very slight, if any, increase of nuclei; there was no definite evidence of their axes cylinders or myelin being affected.

Monkey No. 10, weight 2710 grammes, received subcutaneously 0·5 milligramme per kilogramme of cobra venom. At the end of one and a quarter hours paralysis appeared, and a quarter of an hour later was nearly complete. The animal was then killed by being bled to death, having lived one and a half hours after receiving the poison. The appearances throughout the nervous system in this case were practically normal. In the cord the vast majority of the ganglion cells had their Nissl granules quite consistent and well formed, though in some of the cells they were not so regularly arranged in the cell plasma as in the typically healthy cell. Occasionally, too, one found a section in which these granules seem to be rather deficient in number and not too well defined, as if a solvent had been acting on them. The staining also was more intense than is found in the normal (control) specimens. The same applies to the cells of the cerebral cortex—that was, they were almost normal, though a proportion of them had their Nissl granules deficient and not quite well defined. There was no definite increase of the connective-tissue cells in the grey matter of the cerebro-spinal system. The peripheral nerves might be taken as normal, there being no unequivocal increase of their internodal nuclei.

Monkey No. 11, weight 3310 grammes, received subcutaneously 0·5 milligramme per kilogramme of cobra venom. In two hours and ten minutes there were signs of paralysis in the limbs and the breathing was laboured. Antivenomous serum (ten cubic centimetres) was given intravenously. 50 minutes later paralysis was still present—that was, the animal could move about but with its legs dragging along the ground. Antivenomous serum (15 cubic centimetres) was now given subcutaneously. One and a half hours later all signs of paralysis had gone and the animal was then killed by bleeding from the femoral artery. The appearances of the ganglion cells in this case were of some interest, for when compared with the sections from the two following cases (Nos. 12 and 13) there seemed little doubt that there had been some change in the cells from which they had not yet recovered. In the cord quite 50 per cent. of the cells showed some deficiency of Nissl granules and many of them had these granules fragmented, giving a much finer granulation to the plasma than was normal. In some cells the granulation was quite dust-like, but all gradations were found between these and the cells with Nissl bodies of normal size. The proportion of cells affected in this way varied somewhat at different levels but in

almost any section one could find some few cells with this broken-up granulation. Generally the cells had the appearance of a much more chronic chromatolysis than seemed to be met with in the other cases of cobra poisoning. There were, however, no increase in size of the cell and little diffuse staining of its plasma; and though well stained the cells seemed to stain less intensely than in the cases not treated with antivenene. Much the same appearances as the above were met with in the cerebral cortex and to a less extent in the pons and medulla. There seemed no increase of the connective-tissue cells in the cortex, pons, medulla, or cord unless it be round some few effete ganglion cells which were evidently quite beyond recovery. There was possibly a slight increase in the internodal nuclei of the peripheral nerves but if so it was very slight and could not be said to be unequivocal.

Monkey No. 12, weight 3930 grammes, received subcutaneously 0·5 milligramme per kilogramme of cobra venom. In two hours' time there was complete paralysis and 20 cubic centimetres of antivenene were injected subcutaneously. Two and three-quarter hours later the animal could move its arms and legs but could not sit up. 30 cubic centimetres of additional antivenene were now given subcutaneously with the result that four hours later all signs of paralysis had disappeared. 20 hours later still the animal was killed by bleeding. The ganglion cells throughout the nervous system in this case might be considered as normal. Possibly the Nissl bodies in many of the cells were still slightly deficient in number and not quite so large as in a typically normal case, but there was certainly no appearance as of fragmentation of the granules, as in Case 11, and when compared with the control sections the cells were really practically normal. As in the last case, there was little or no increase of the connective-tissue cells and the staining of the section generally was less intense than in the first ten cases. The peripheral nerves also might be regarded as being normal.

Monkey No. 13, weight 3210 grammes, received subcutaneously 0·45 milligramme per kilogramme of cobra venom. In two and a half hours there was the appearance of slight paresis and about an hour later the paralysis was almost complete. Antivenene (nine cubic centimetres) was now given intravenously and ten minutes later 18 cubic centimetres subcutaneously. An hour later the paralysis was still marked but in the course of the next two hours it became much less apparent. The animal was killed about 44 hours later. The appearances here were almost the same as in Monkey No. 12. There was the same slight deficiency of Nissl granules in many of the ganglion cells and in some adjacent granules seemed to have fused, forming masses of chromatic material considerably larger than normal. Generally, however, the sections might be regarded as being normal.

Of these seven monkeys the first four, we have said, are to be regarded as an addition to the series of six already published. From an analysis of these latter we concluded in our former paper that it is necessary for a monkey to live from at least two to three hours after injection of cobra venom if microscopic changes are to be found in the motor ganglion cells of the central nervous system. Cases 9 and 10 of this present series corroborate that observation, for Monkey No. 9, living two and a half hours after receiving the poison, shows sufficiently definite signs of an early degeneration in its ganglion cells, while with Monkey No. 10 (which lived for one and a half hours) there is no certain evidence of such degenerative changes. And judging from the whole ten cases it would seem sufficiently evident that the longer the animal lives after its injection, that is to say, the longer time the venom has to act, the more advanced are the degenerative changes in ganglion cells. In Monkeys Nos. 8 and 1 there is no doubt of the chromatolytic changes in a large proportion of the ganglion cells, but in Monkey No. 7 (dead after six and a half hours) the changes are distinctly more advanced—there are more cells involved and more vacuolation; and it seems as if the extra half hour the poison had to act made quite an appreciable difference in the degenerative appearances. The venom, too, at least as regards the central nervous system, seems to act chiefly on the ganglion cells, for, as we have seen, there is no appearance in any of the cases of degeneration of the myelin or axes cylinders in the cord, medulla, pons, or cortex. There is possibly a slight reaction in the connective-tissue elements in the grey matter, for in most of the cases the "neuronophagen" cells seem more numerous than normal. This increase, however, is not nearly so well marked as in some other intoxications, such, for instance, as rabies. But many of the ganglion cells in the earlier stages of degeneration have several connective-tissue cells surrounding them, sometimes indenting their margins and sometimes in their interiors, though it is round the ganglion cells in the latest stages of disintegration that one sees the greatest number of these connective-tissue cells. And this suggests a neuroclastic function for the cells, that of removing dead cells, rather than their being a response to a chemiotaxic action of the cobra venom in or around the healthy or slightly degenerated ganglion cells. Possibly, however, these connective-tissue cells play both these parts. Most of the ganglion cells in the various monkeys have some slight amount of yellow pigment scattered throughout their cell plasma but this does not seem to be influenced by the toxin and it is as abundant in the control specimens as in the monkeys subjected to the cobra venom.

As to the action of cobra venom on peripheral nerves we have nothing very definite to report. The nerve endings were not examined in the cases above recorded, only the nerve trunks—viz., the median from the upper arm, the posterior tibial from behind the gastrocnemius muscle, and the vagus from the cervical region. But though there is no very definite degenerative change to be noted in the nerves at those levels, still the increase in the number of internodal nuclei in Nos. 7 and 8, and possibly also in No. 9, seems to indicate some reaction to the toxin. It is true that the increase of these nuclei is by no means so undoubted as to make one certain that the change is a pathological one. But by careful comparison with normal (monkey) nerves we have formed the opinion that these appearances are pathological. And we are confirmed in this by Dr. R. A. Fleming who has most kindly gone over our sections of nerves and who agrees with us that the increase of nuclei is quite sufficiently definite to be evidence of a commencing degeneration. In the sections of nerves stained by Busch's method there is no appearance of coagulation or breaking up of the myelin, though some of the fibres, especially in Monkeys Nos. 7 and 8, show a certain degree of "blackening." This is probably an artefact, as the nerves were from two to three weeks in formol before going into Busch's fluid. Still, the number of blackened fibres is greater in Monkeys Nos. 7 and 8 than in Monkey No. 9 and in control specimens prepared in exactly the same manner there is scarce any "blackening" whatever. It may be that this appearance of the fibres in Nos. 7 and 8 indicates some chemical change in the myelin due to the action of the venom, but if so it is a reaction with which we have no acquaintance and, as we have said, we count it as an artefact. The axes cylinders of the nerves in almost all the cases show in places a certain amount of spindle-shaped swelling, but we find the same appearances, though possibly to a less extent, in the control specimens, and so we regard the axis cylinders as being unaffected.

The last three monkeys, Nos. 11, 12, and 13, are of interest as showing the appearances of the ganglion cells at different intervals after recovery from cobra poisoning. All the cases had shown marked signs of paralysis and in each two hours or more had elapsed—i.e., time for slight changes to take places in the ganglion cells before the antivenene was given. In Monkey No. 11, killed immediately on the disappearance of all signs of paralysis, the changes in the ganglion cells are still very apparent. But the appearances differ very considerably from those met with in animals dying paralysed from cobra venom. In these latter we have seen it is an acute chromatolysis that is present, while in Monkey No. 11, on the other hand, the appearances are such as one associates with a much more chronic change. Possibly this is due to the antivenene inhibiting the action of the venom and so modifying the reaction in the ganglion cell, for though changes had doubtless commenced in the cells before the antivenene was given, still these changes must have been very slight and not nearly so well marked as are seen in this animal after recovering from its paralysis. It seems clear, therefore, that though the antivenene probably modifies the action of the venom, still it does not at once stop the chromatolysis going on in the ganglion cells. But, on the other hand, the appearances of the cells in Monkey No. 11 may indicate a regeneration of its chromatic material. That such regeneration does take place is shown by Monkeys Nos. 12 and 13 in both of which the ganglion cells are practically completely recovered. Monkey No. 12 was killed

20 hours after recovery from paralysis, so that it would seem that regeneration of the ganglion cells takes place sometimes within 20 hours after disappearance of the symptoms of paralysis. But we hope at some future time to study more carefully the process of regeneration in the ganglion cells either with cobra venom or with one of the other snake poisons.

In concluding, we wish to express our indebtedness to Dr. J. Lindsay Steven for the use of his laboratory and apparatus in carrying out a part of this investigation. One of us (W. K. H.) has also to acknowledge aid from the Carnegie Trust in the form of a grant towards the expenses incurred in this investigation.

THE

RESPIRATORY AND CARDIAC REFLEX INDUCED BY PERIPHERAL IMPRESSIONS ON THE PUDIC NERVE DURING ANÆSTHESIA.

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IN his "Address in Surgery" to the British Medical Association Sir William Macewen refers to the familiar spasm of the glottis produced during anæsthesia by forcible dilatation of the sphincter ani or irritation of the parts supplied by the pudic nerve. In these circumstances this spasm is part, often the only surviving part, of an expulsive effort and has, I think, been recognised as such for some time. The causes which give rise to it are of a kind which in normal circumstances tend to initiate expulsive efforts. Chief of these are any sudden increase in the intra-abdominal pressure—e.g., distension of the bladder or rectum, the reduction of large herniæ of old standing, the introduction of the hand or large sponges into the abdominal cavity, dilatation of the sphincter ani and occasionally of the os uteri, &c. It may also be produced by any peripheral irritation, especially in young subjects. Its occurrence in the course of surgical interference comes about in the following manner.

Expulsive efforts are performed through the agency of the respiratory and other nerve centres in response to stimuli reaching them from certain organs and conveyed by various nerves, chief of which are the branches of the pudic nerve. Irritation of one of these nerves produces an impression on the centre more or less equivalent to its normal stimulus and evokes a reflex response, just as irritation of the optic nerve gives the sensation of a flash of light. During narcosis normal stimuli conveyed to the nerve centres by a distended bladder or rectum or abnormal stimulation by forcible dilatation of the sphincter ani or irritation of the pudic nerve result in an expulsive effort. The completeness of this effort depends upon the degree of narcosis; that is, upon the number of unparalysed nerve centres that are left to carry out the act. This becomes evident when the constitution of the nervous system and its mode of reaction towards anæsthetics are considered.

The nervous system as a whole is composed of numerous nerve centres or nerve mechanisms which appear and reach their maturity at different periods in the evolution of the race and growth of the individual. The highest and most complex of these functions are latest developed and least able to resist disease or depressing conditions. This also holds good as regards their response to the action of chloroform and other anæsthetics. The continued inhalation of chloroform induces a progressive paralysis of the various nerve centres, beginning with the highest, most complex, and latest acquired functions, and ending with paralysis of the fundamental functions of respiration and circulation. What is true of the nervous system as a whole is equally true of its more complicated reflex mechanisms which react to anæsthetics in a similar manner. Each reflex mechanism consists of a fundamental and accessory elements, which latter by their coöperation assist in the performance of the reflex without being absolutely essential to it. Thus in every such reflex there are associated several nerve centres the coördinate action of which is necessary for the complete development of the reflex. Under the influence of deepening anæsthesia these associated accessory centres are the first to be paralysed, but the essential factor in the reflex resists longest and is the last to disappear.

An expulsive effort is a mixed reflex intimately associated with respiration but requiring for its most effectual performance the assistance of various nerve centres. Intrinsically it is an expiration, more or less forcible, necessarily associated with closure of the glottis. This sudden closure or spasm of the glottis is an essential or fundamental portion of the reflex and constitutes the feature which differentiates it from an ordinary expiration. This being so, the act of closing the glottis, as a fundamental factor in the reflex, should longest resist the anæsthetic, and this proves to be the case. Under the influence of the anæsthetic the associated nerve centres gradually become paralysed, the response to stimuli becoming less and less complete as fewer nerve centres participate in the action. Ultimately when the narcosis has become profound the essential fundamental portion of the reflex, the closure of the glottis, alone survives. Finally, this, too, may be abolished and then the only response to stimulation is evidenced by an alteration in the respirations through the effect of the stimulus on the unparalysed respiratory centre. Under varying degrees of narcosis every variety of expulsive effort may be seen from a complete effort accompanied with closure of the lips, alteration of the facial expression, and "bearing down" in slight anæsthesia, to the faintest laryngeal stertor or mere catch in the breath in deep narcosis. The spasm cannot be safely abolished because it arises from the respiratory centre, which strongly resists the action of anæsthetics.

When spasm of the glottis arises as the consequence of peripheral irritation its mechanism would appear to be as follows. Sudden acute pain in the conscious subject is met by an involuntary deep inspiration, followed by closure of the glottis and fixation of the chest preparatory to an exclamation or other effort. What occurs in the conscious subject tends equally to occur in the unconscious or semi-conscious individual, but a number of centres being paralysed the action is not complete or properly coördinated, hence the stertor. As regards the alteration in the pulse there are two factors. The procedures inducing the above abortive expulsive efforts are all painful and as such cause a certain amount of shock and so may influence the circulation. Further, the circulation is intimately associated with, and in a measure dependent upon, the respiratory movements. Any modification of these, especially such as increase the intrathoracic pressure, as do expulsive efforts, of necessity alter the pulse and will account for the majority of the cases.

It is interesting to note that forcible dilatation of the sphincter ani has been suggested as a remedy in chloroform accidents, the object being to stimulate respiration. Of course, in the conscious subject an expulsive effort is preceded by a deep inspiration but in a state of narcosis sufficiently profound to induce respiratory paralysis this would not take place. It is questionable if at any stage of narcosis other than a very slight one this almost involuntary preliminary inspiration could be elicited by dilatation of the sphincter ani.

Manchester.

A CASE OF LATENT PORTAL CIRRHOSIS WITH SUDDEN ONSET OF HÆMATEMESIS AND RAPIDLY FATAL TOXÆMIA.

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The following case is of interest from the great rarity of the concurrence of these conditions, the suddenness and rapidity of the symptoms without any prodromal signs in a case of cirrhosis which had been latent for many years, and the post-mortem examination revealing a healthy condition of the abdominal viscera.

On April 26th, 1904, I was called to see the patient, a stout, healthy man, aged 56 years. He had been perfectly well up

to the previous day, but now complained of malaise and drowsiness with a feeling of "fulness in the stomach." Examination proved negative; no pain or abdominal tenderness could be made out. The temperature was normal and the pulse was 76 and soft. Simple gastric sedatives were prescribed. On the next morning at 3 A.M. I was called to see him. When I arrived I found that he had vomited about a quart of blood consisting of small recent clots. He was now in a semi-comatose condition and very irritable and resisted any attempts at physical examination. Later in the day a large motion consisting of altered blood was passed and with considerable difficulty the following points were revealed by examination. In the epigastrium a hard tumour was felt of about the size of the closed fist; it was semi-resonant and apparently the surface was smooth, but owing partly to the patient's mental condition and partly to the fatness of the abdominal walls its relation to the liver could not be definitely made out. The edge of the liver was felt in the right flank about two fingers' breadth below the costal margin. There were no prominence of the superficial abdominal veins, no evidence of ascites, and no œdema of the extremities. The patient was not jaundiced, the tongue was clean, and the breath had no characteristic odour. The temperature was 99° F. and the pulse was 84, soft and regular. The arteries were normal. Examination of the thorax was negative. Later he became delirious and finally comatose but recovered consciousness after an intravenous transfusion of a quart of normal saline solution. Urine was freely passed during this period of consciousness. There were no trace of albumin and no reaction with ferric chloride. The specific gravity was 1030. Unfortunately the improvement of his mental condition was only temporary. In about eight hours his pulse rose suddenly to 132 and suspecting the possibility of another hæmorrhage one and a half drachms of adrenalin chloride were administered by the mouth. Within half an hour the pulse had fallen to 96 with decided improvement in his condition. On the next day the patient rapidly lost consciousness again, the pulse remaining at 96. The weakness gradually increased. Six hours before death the temperature rose to 102·6°, four hours later it was 104·2°, and it was maintained at that point when death occurred.

Post-mortem examination.—Rigor mortis was present. There was about an inch of fat on the abdominal walls. There were no enlarged veins and no signs of jaundice. The abdominal cavity was free of fluid. The tumour felt in the epigastrium was found to be the left lobe of the liver which was moderately enlarged. The liver was "hobnailed." The right lobe was of about the normal size and shape. It cut with increased resistance: on section it showed signs of coarse cirrhosis of a multilobular type. The fibrous tissue was in narrow strands and evenly distributed throughout the organ. The gall-bladder was distended with normal bile, but no calculi were present. The spleen was much softer than usual and about double the normal size. There was no evidence of gastritis in the stomach beyond a small amount of mucus on the walls and it was not dilated; petechiæ were found at the cardiac end on the lesser curvature, over an area about two inches by one inch, together with two or three small erosions at the same spot, but no evidence of eroded vessels was found. Only one inch of the œsophagus was examined; the veins were very prominent. The kidneys were healthy. It is to be regretted that only a partial post-mortem examination could be made.

The patient, a hypochondriac whose previous medical history was uneventful, had, so far as it could be ascertained, always enjoyed good health and not suffered from any illness. After his death I was able to obtain a history of free indulgence in alcohol for a year or two which, however, was said to have ceased some seven years or more ago. Since then he had been a moderate liver, though there is reason to believe that for about a fortnight before this illness he had drunk to excess and had suffered great mental distress. Three months previously I had examined him thoroughly but could not find any sign of local or general disease. There had at no time been any epistaxis, nausea, or dyspepsia, beyond occasional attacks of flatulence; neither had vomiting occurred and the bowels were always very regular—in fact, up to the onset of his illness there had been no reason to regard him otherwise than as a healthy man with a tendency to corpulence.

The chief interest of this case lies (1) in the conjunction of hæmatemesis and toxæmia, the latter being possibly exaggerated by the hæmatemesis; (2) the latent hepatic condition; and (3) the fulminating quality of the symptoms when they arose, all of which rendered diagnosis extremely difficult. That toxæmia from some cause or other was present appeared probable from the absence of any definite evidence of an organic cerebral lesion, but with the exception of hæmatemesis and what subsequently proved to be enlargement of the liver the signs upon which to base a diagnosis were purely negative. The urine was free from sugar and albumin. The heart and the radial vessels were healthy and there were no signs of renal disease. Probably in this case an acute process had been set up in the liver by the last bout of drinking, and this, together with the decrease in the coagulability of the blood produced by the alcohol, would account for the rapidity and the combination of the symptoms.

As has been pointed out already, the peculiar feature of interest in this case of latent cirrhosis is the sudden and simultaneous appearance of hæmatemesis, which is usually an early symptom, and of toxæmic coma, usually a terminal event in portal cirrhosis. The most satisfactory explanation would appear to be that sudden and complete insufficiency of the liver supervened, probably as the result of recent excessive alcoholism. Gilbert and Carnot,[1] who speak of this condition as "anhépatie," mention among its manifestations "multiple hæmorrhages, delirium, and coma." It is possible that the small erosions in the stomach were due to the toxic action of the alcohol and their existence might account for the occurrence of the extensive local hæmorrhage instead of multiple extravasations. Latent cirrhosis was thought of and that diagnosis was held tentatively. Less difficulty might have been experienced had an alcoholic history been forthcoming earlier, but its absence at that time, together with the rare combination of hæmatemesis and toxæmia, militated against the theory of hepatic cirrhosis and it is owing to this unusual combination that I venture to place this case on record.

I am indebted to Dr. H. D. Rolleston for his kind suggestions.

Cadogan-gardens, S.W.

THE

MEDICAL TREATMENT OF DEEP-SEATED HÆMORRHAGE.

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IT is generally admitted that most therapeutic advances have originated more or less accidentally in observation—that is, inductively, not deductively. The therapeutic procedure advocated in this paper, should it be accepted as an advance, is one of the exceptions to the above general rule. It was suggested by physiological considerations and only thereafter put to the clinical test.

It may be stated as not open to question that hæmorrhage, whether arterial or capillary, depends essentially upon the existence of a certain blood pressure in the bleeding area and that the indication for medical treatment consists in reducing this localised blood pressure. Such we might hope to achieve: (1) by promoting vaso-constriction of the arterioles supplying the bleeding area; or (2) by promoting fall of blood pressure through widespread vaso-dilation in other areas. It is to the first of these methods that attention is commonly directed. In cases where the bleeding area is accessible to local treatment—for example, in certain cases of hæmatemesis—the promotion of localised vaso-constriction, as by ice pills, adrenalin, &c., may be very successful. But frequently the bleeding area is inaccessible to direct local treatment. Then in order to promote localised vaso-constriction we are forced to fall back upon remedies which promote vaso-constriction generally. Until lately ergot was the remedy usually used for this purpose, but now that far more powerful vaso-constrictor adrenalin is coming into general use. As regards ergot, though I have used it conscientiously for many years in cases of inoperable deep-seated hæmorrhage yet I could never assure myself that it was of real advantage except, of

[1] Les Fonctions Hépatiques, p. 273.

course, in uterine hæmorrhage. But the general, as well as the local, action of adrenalin is undoubtedly capable of checking hæmorrhage in some cases. There are, however, at least two serious objections to all remedies which promote general vaso-constriction effectively. On the one hand, unless the general vaso-constriction is adequately compensated by cardiac inhibition the general blood pressure, including the blood pressure of the bleeding area, will rise rapidly; thus the bleeding might continue or even increase. On the other hand, if the general vaso-constriction is adequately compensated by cardiac inhibition serious symptoms depending on brain anæmia are liable to arise; these might conceivably amount to general convulsions. This danger is not, I think, fully appreciated although it is known that in epilepsy the administration of suprarenal extract increases the number of attacks (Pugh [1]).

These considerations led to the determination to try the second method of reducing blood pressure in the bleeding area, namely, by promoting the fall of the general blood pressure through widespread vaso-dilation, and the administration of amyl nitrite by inhalation was the obvious means of fulfilling this indication. This method, it was argued, would be applicable not alone to cases of hæmorrhage from some part of the systemic circulation but to pulmonary hæmorrhage. For, as Schäfer [2] points out, the blood pressure in the pulmonary circulation may be reduced passively "by a fall of pressure in the left auricle due to diminished resistance in the aortic outflow"; and there could be no question that amyl nitrite would diminish resistance in the aortic outflow. The following is a brief account of the first four cases of hæmoptysis treated by inhalation of amyl nitrite.

CASE 1.—The patient, a man, aged 36 years, who suffers from mitral insufficiency, is often attacked on becoming chilled by hæmoptysis: this probably is a response to cutaneous vaso-constriction. The bleeding had never ceased under two days and usually it had persisted for from two to four days. On the last occasion hæmoptysis began at midnight. There was at the time marked coldness of the hands and feet which was not due to anxiety. The inhalation of one capsule of amyl nitrite instantly relieved the vascular spasm of the extremities, and although the expectoration continued to contain traces of blood until the following day it was quite clear that the bleeding into the lung had been instantaneously checked. (Communicated by Mr. C. S. Hawkes.)

CASE 2.—A man, aged 31 years, a phthisical patient in the Diamantina Hospital, with consolidation and softening at the left apex, had hæmoptysis at 4.30 P.M. One capsule of amyl nitrite was immediately given by inhalation, whereupon the bleeding ceased instantaneously. At 6.50 P.M. there was a slight recurrence and $\frac{1}{100}$th of a minim of nitroglycerine was ordered every two hours. Rather profuse hæmoptysis recurred at 12.40 on the following morning but was again stopped instantaneously by amyl nitrite inhalation. Thereafter there was no further recurrence. In this case there can be no doubt that the bleeding ceased *propter*, and not merely *post*, *hoc*. On both of the occasions on which the inhalation was given the patient was bringing up mouthfuls of blood at regular intervals of about two minutes and on both occasions the mouthful preceding the inhalation was the last of the series.

CASE 3.—A man, aged 34 years, a phthisical patient in the Diamantina Hospital, with excavation of the upper part of both lungs, had had twelve attacks of hæmoptysis in nine years. Each attack had begun insidiously and steadily increased in severity. On no occasion had he ever had a slight attack of hæmoptysis which had passed off or been overcome without laying him up for ten days or a fortnight, and most of his attacks had constituted serious intercurrent illnesses which had left him conspicuously worse than at their onset and from which he did not recover for some weeks. On Jan. 16th, 1904, he began to cough up a little blood unmixed with his ordinary sputa. He was ordered to bed, all food was stopped, and a five-minim capsule of amyl nitrite was administered. The hæmoptysis stopped instantaneously, although streaks of blood permeated his sputa for a few days. During these days a capsule remained on his locker in readiness and he was instructed to use it immediately should the bleeding recur; it was not required, however.

CASE 4.—A phthisical patient in the Jubilee Sanatorium, Dalby, Queensland, had a cavity in the right apex. On Dec. 6th, 1903, hæmoptysis commenced. Over five ounces of blood had been lost when one capsule of amyl nitrite was administered by inhalation. The hæmorrhage ceased instantaneously and completely. On Jan. 30th, 1904, there had been no recurrence. Dr. Andrew Stewart, the visiting physician of the sanatorium, who reports this case, points out that there was no subsequent local congestion or rise of temperature such as usually occurs after hæmoptysis as severe as in this instance.

In the first of the above cases the proximate factor of the hæmoptysis was in all probability a sudden rise of blood pressure in the pulmonary circulation secondary to increased resistance in the aortic outflow dependent on widespread vaso-constriction of the skin from chill; in the remaining three the proximate factor was probably some extension of the tuberculous or septic ulceration, but in all the rationale of the result was identical—namely, the rapid, though indirect, reduction of blood pressure at the bleeding area.

To sum up, five consecutive attacks of hæmoptysis occurring in four patients were all stopped instantaneously by amyl nitrite inhalation. There has not been hitherto an instance of even comparative failure.

Manifestly in hæmoptysis there is in operation one of the most highly vicious circles in pathology—a circle which is largely responsible for the profuseness and continuance of the hæmorrhage. The intra-pulmonary irritation of the effused blood causes cough; each act of coughing, like any other form of sudden exertion, raises the blood pressure; each rise of blood pressure is apt to induce fresh hæmorrhage; and so on, the circle continuing to revolve in many cases until the loss of blood has been sufficient to reduce the blood pressure materially and thus terminate the hæmorrhage. This natural cure of hæmoptysis was at one period in the history of medicine imitated by physicians who resorted to venesection in this emergency—a somewhat expensive, but by no means irrational, imitation. The treatment by amyl nitrite is another imitation, less complete than venesection, but much more economical. The vicious circle is broken through at the same point and by similar means—namely, reduction of the general blood pressure, but the blood is saved instead of being lost. Consequently the procedure may be repeated as often as is necessary.

The point at which the vicious circle is broken through is of the greatest importance. Too often, I feel sure, I have been tempted to operate upon the cough by opiates such as morphine hypodermically. The resulting cessation of cough tends undoubtedly to the cessation of hæmorrhage, but the blood already effused is retained, decomposes inevitably, and not rarely induces septic pneumonia, high temperature, sweating, and prolonged exhausting illness not infrequently ending in death. This is the history of so many cases which seemed under open-air treatment on the road to rapid recovery that I had come to regard hæmoptysis as a grave misfortune. But if amyl nitrite proves efficient as a hæmostatic the hæmoptysis of phthisis will be largely freed from its subsequent as well as its immediate dangers. For the action of the drug is a safeguard against retention: it is the influx of blood to the ulcerated lung tissue, not the efflux from the air passages, which is checked; and the uninterrupted continuance of cough assures the rapid evacuation of blood already effused. In none of the cases detailed above was there, in so far as could be ascertained, any retention of blood; in none of them certainly was there the least subsequent additional rise of temperature or other complication.

Clinically phthisical hæmoptysis is the most important, because the most frequent, of all the medical or inoperable hæmorrhages. But the treatment by amyl nitrite would be even more directly applicable to cases in which the bleeding is from the systemic circulation. In a series of papers entitled "The Mechanism of the Paroxysmal Neuroses," which appeared in the *Australasian Medical Gazette* for July, August, September, and October, 1903, I argued that the most prominent clinical phenomena of migraine, gastralgia, asthma, and allied affections—namely, pain in the first two and dyspnœa in the last named—depend upon vascular distension due to vaso-dilation correlative of widespread vaso-constriction in other areas. (The evidence in support of this thesis is mainly clinical and circumstantial and cannot be even referred to here through lack of space.) Such vascular distension has terminated not very rarely in hæmorrhage. Thus in migraine there have resulted ecchymoses, sometimes extensive, of the face, scalp, conjunctivæ and choroid (Gowers, Tissot, Labarraque), profuse

[1] Brain, 1902, p. 501.
[2] Text-book of Physiology, 1900, vol. ii., p. 150.

epistaxis (Liveing), and fatal apoplexy (Hilton Fagge); in asthma there has occurred hæmoptysis proportionate to the severity of the dyspnœa (Hyde Salter): and in gastralgia violent hæmatemesis has taken place.[3] Now, in none of these cases is it possible to be sure that the internal vaso-dilation, proximately responsible for the vascular distension and hæmorrhage, is always secondary to, and compensatory of, the widespread vaso-constriction, especially conspicuous in the cutaneous area; it may be that of some cases the converse holds—that the vaso-dilation is primary, the vaso-constriction being secondary and compensatory. But in either case it is certain that the vaso-constriction greatly intensifies the vascular distension in the bleeding area and consequently that a primary indication for treatment consists in the relaxation of the vaso-constriction. Amyl nitrite will undoubtedly effect this relaxation and thus will relieve the vascular distension; that is, the local blood pressure in the bleeding area. The treatment, however, so far as I know, has yet to be tried in these cases, but I can have little doubt of its success, at any rate its partial success.

In the series of papers already referred to it was also argued that the mechanism of the physiological process of menstruation is identical with that of the pathological processes exemplified in migraine, gastralgia, asthma, &c. It was argued that just antecedent to and during menstruation there is an exaggeration of the normal physiological vascular tone or vaso-constriction in wide areas, conspicuously in the cutaneous area, and that such is compensated to some extent, though not fully, by vaso-dilation in the pelvic, more especially the uterine, area. This vascular modification accounts for the physiological increase of blood presssure antecedent to and during menstruation and for the premenstrual and menstrual incidence of the paroxysmal neuroses; it accounts also for the vascular distension of the uterine mucosa and for the eventuating hæmorrhage or menstrual flow. If this view of the mechanism of menstruation is correct, then anything—amyl nitrite inhalation, for example—which tends to cause widespread vaso-dilation, especially vaso-dilation of the surface, would tend to reverse the whole machinery of the menstrual process and would inevitably diminish, if it did not succeed in terminating, the uterine vascular distension and the menstrual flow dependent thereon. Now it is open for any physician to assure himself that amyl nitrite has this power. But I would not suggest that the experiment be made except, perhaps, in very special circumstances; for I have reason to believe that the sudden cessation of the menstrual flow which is liable to result may be fraught with exceedingly distressing, if not dangerous, sequelæ.

While I was deliberating as to the justifiability of testing the influence of amyl nitrite upon the menstrual flow I unwittingly performed the experiment, thus setting at rest any question as to the capacity of the drug to act in some cases in the manner anticipated. I was called in to see a woman, aged 25 years, who was suffering from vaso-motor angina pectoris. Almost immediately after my arrival a paroxysm occurred. I administered a capsule of the nitrite. The result was the instantaneous cessation of the pain, but the attacks continued to recur during the succeeding three or four days. A week later I learned that the patient had been menstruating when I administered the nitrite and that the period had terminated instantaneously. I then obtained the following history. She had suffered from angina on and off for several years. The attacks were especially prone to occur and to be especially severe on the day preceding and on the first day of menstruation. Several physicians had administered amyl nitrite and this invariably gave instant relief. But whenever she had inhaled the drug during menstruation—and she had done so frequently—the invariable result had been the immediate cessation of the flow and the termination of the period. She had made the further important observation that whenever a menstrual anginal seizure was dispersed by the nitrite with concurrent checking of the flow the attacks continued to recur for several days, but whenever the drug was omitted during menstruation the anginal seizures were limited to the day preceding and the first day of menstruation. Menstruation in her case was exceedingly irregular as regards time of onset and she was of opinion that menstrual periods had often been altogether missed through inhalation of amyl nitrite. Considering the frequency of premenstrual attacks in her case this seems not unlikely.

South Brisbane, Queensland.

[3] See a discussion on the Pathology, Prognosis, and Treatment of Hæmatemesis, Brit. Med. Jour., Nov. 29th, 1902.

THE RIDEAL-WALKER METHOD OF TESTING DISINFECTANTS, WITH SPECIAL REFERENCE TO THE ACTION OF FORMALIN AND CYLLIN ON THE PLAGUE BACILLUS.

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LAST year Mr. Rideal and Mr. Walker[1] described a simple and ingenious method for testing the germicidal action of disinfectants. The method was so devised that a number of tests with different strengths of the substance at stated intervals could be carried out with a minimum of labour and with the least expenditure of time. The method was also especially devised to compare the disinfecting action of different substances, and as a comparison these authors adopted carbolic acid as a standard. They were thus able to obtain a figure which they term "the carbolic acid coefficient," and which is of especial value for comparative purposes. This figure is obtained thus: the particular strength of the disinfectant which will kill in a given time is divided by the strength of carbolic acid which under the same conditions will kill the same microbe in the same time. Thus if a 1 in 80 solution of disinfectant X will destroy the typhoid bacillus in five minutes and the strength of carbolic acid which will act similarly is 1 in 100, the carbolic acid coefficient of X is $\frac{80}{100} = 0{\cdot}8$; if a solution of disinfectant Y of strength 1 in 150 is similarly equal to carbolic acid 1 in 100, the carbolic acid coefficient would be $\frac{150}{100} = 1{\cdot}5$. The cost of disinfecting can thus also be estimated. If disinfectant X costs the same as carbolic acid, the cost of disinfecting with X would be two-tenths more than with carbolic acid; with Y in the same circumstances carbolic acid disinfection would cost half as much again. Briefly, the details of carrying out the method are as follows. A special test-tube rack is made use of. It consists of a lower tier with five holes for five test-tubes and an upper tier with two rows (one behind the other) of 15 holes each and divided by spacing into three groups of five (or tens reckoning both rows). Into the bottom row test-tubes containing five cubic centimetres each of various strengths of the disinfectant and of carbolic acid for comparison are placed and into each are dropped at intervals of half a minute five drops of a broth culture of the organism chosen—e.g., the typhoid bacillus, bacillus coli, or micrococcus pyogenes aureus, &c. Having finished the addition of the culture to the tubes subcultures are made in nutrient broth, the broth tubes having previously been placed in the rack in the upper tier of holes, a loopful being taken from each tube containing the disinfectant and sown into a broth tube at intervals of half a minute. In this way a subculture is made from each tube after intervals of two and a half, five, seven and a half, ten, 12½, and 15 minutes. The inoculated tubes are then incubated; if growth occurs it is assumed that the organism has not been killed, if no growth occurs it is assumed that it has been killed, and the results may be charted on appropriate forms as shown below. Sterile test-tubes are employed for the disinfecting solutions, the dilutions of the disinfectant are made with sterile tap water with sterilised pipettes, and in this way contamination with extraneous microbes is practically excluded.

Smith and Sommerville[2] have tested the method and have

[1] Journal of the Sanitary Institute, vol. xxiv., Part 3, p. 424.

[2] Journal of State Medicine, vol. xii., No. 1, January, 1904, p. 41.

found it work well. Sommerville[3] also gives the results of further experiments carried out by the method demonstrating its accuracy. The bacillus typhosus, together with the bacillus coli communis, form diffuse abundant growths with more or less isolated microbes in broth cultures 24 hours old. We thought it desirable to test the method on a microbe which did not form such satisfactory cultures and we chose for this purpose the plague bacillus which, as is well known, in broth gives a flocculent sticky deposit at the bottom of the tube. We used as disinfectants formalin, cyllin, and carbolic acid and broth cultures of plague, 48 and 72 hours old, well shaking and mixing before use. Our results were disappointing. We often obtained no growth at all in the subculture tubes and the experiments were therefore blanks, or we obtained quite erratic results which were useless for the purpose of arriving at the carbolic acid coefficient. Investigating the causes of these results we found in the first place that, contrary to our preconceived idea, broth did not form a suitable culture medium for the test cultures. Apparently, in our broth at any rate, a *minute* trace of plague does not grow at all freely in this medium and we found that nutrient agar was a much more suitable culture medium, giving results when the broth cultures under the same conditions were blanks. Similarly a broth culture of plague even 72 hours old contains relatively few organisms, or these are aggregated into relatively few masses, compared with the broth cultures of typhoid, &c., and the chances therefore of obtaining a culture from the disinfecting solutions, even though the organisms are not destroyed, are small. We therefore substituted for broth cultures suspensions of agar cultures, but as is well known there is great difficulty, owing to the stickiness of the growth, of preparing a uniform suspension and we found it necessary to add much larger quantities of the suspension, 0·5 cubic centimetre of a 48-hour agar culture, to the tubes of disinfectant, thereby reducing their strength somewhat. This, however, for comparing disinfectants is of small moment, as the results are still *comparative*, which is all that is required. We also found it necessary to incubate the culture tubes for a much longer time, at least seven days, as after even five or six days a growth sometimes developed in what previously appeared to be a blank tube. Having after a considerable amount of labour and the use of some hundreds of tubes of culture media thus cleared the way, we may give some of the results which we have obtained. The results are best charted as follows:—

Test No. 25, June 20th, 1904.—Bacillus Pestis (Laboratory Culture).

Sample.	Dilution.	Time culture exposed to action of disinfectant—minutes.					
		2½	5	7½	10	12½	15
Formalin	1 in 10	*	*	*	*	*	*
,,	1 ,, 20	*	*	*	*	*	*
,,	1 ,, 30	x	*	*	*	*	*
Phenol	1 ,, 70	*	*	*	*	*	*
,,	1 ,, 80	*	*	*	*	*	*

x = growth. * = no growth.

Test No. 26, June 20th, 1904.—Bacillus Pestis (Laboratory Culture.)

Sample.	Dilution.	Time culture exposed to action of disinfectant—minutes.					
		2½	5	7½	10	12½	15
Cyllin	1 in 1500	*	*	*	*	*	*
,,	1 ,, 2000	*	*	*	*	*	*
,,	1 ,, 2500	*	*	*	*	*	*
,,	1 ,, 3000	*	*	*	*	*	*
Phenol	1 ,, 90	*	*	*	*	*	*

In all cases the subcultures were incubated for at least seven days at 37° C. These two tests, which were preliminary ones after having arrived at the proper method, yield no result, the disinfectants being used in too great a strength.

Test No. 29, July 1st, 1904.—Bacillus Pestis (Laboratory Culture).

Sample.	Dilution.	Time culture exposed to action of disinfectant—minutes.					
		2½	5	7½	10	12½	15
Formalin	1 in 30	x	x	*	*	*	*
,,	1 ,, 40	x	x	x	*	*	*
,,	1 ,, 50	x	x	x	x	x	*
Phenol	1 ,, 100	*	*	*	*	*	*

Test No. 30, July 1st, 1904.—Bacillus Pestis (Laboratory Culture).

ample.	Dilution.	Time culture exposed to action of disinfectant—minutes.					
		2½	5	7½	10	12½	15
Cyllin.	1 in 3500	x	*	*	*	*	*
,,	1 ,, 4000	x	x	*	*	*	*
Phenol.	1 ,, 100	*	*	*	*	*	*
,,	1 ,, 110	?	x	*	*	*	*

From these two tests, performed at the same time, we see that 1 in 30 formalin and 1 in 4000 cyllin have the same germicidal action as 1 in 110 carbolic acid.[4] The carbolic acid coefficient of formalin would therefore be $\frac{30}{110} = 0{\cdot}27$ and of cyllin $\frac{4000}{110} = 36{\cdot}36$.

Test No. 34, July 15th, 1904.—Bacillus Pestis (Virulent Culture).

Sample.	Dilution.	Time culture exposed to action of disinfectant—minutes.					
		2½	5	7½	10	12½	15
Cyllin.	1 in 4000	x	x	*	*	*	*
Formalin.	1 ,, 40	x	*	*	*	*	*
Phenol	1 ,, 110	x	*	*	*	*	*

From this test we may assume that a slightly stronger solution of cyllin—say, 1 in 3500—would have had a germicidal action equal to 1 in 110 carbolic acid. The carbolic acid coefficient for formalin works out at $\frac{40}{110} = 0{\cdot}37$ and for cyllin at $\frac{3500}{110} = 31{\cdot}8$.

Our conclusions are therefore: 1. That the method, while a very simple and accurate one for organisms which form abundant, uniform, diffuse growths in young broth cultures, is not nearly so satisfactory for an organism that forms a scanty, flocculent, coherent growth in broth like the bacilli of plague or anthrax, in which cases a suspension of an agar culture is to be preferred. 2. As the result of a large number of tests the carbolic acid coefficient of formalin for the plague bacillus averages 0·3 and that of cyllin averages 34·0.

[3] Brit. Med. Jour., July 2nd, 1904, p. 15.

[4] The fourth tube in the first column (i.e., 1 in 110 carbolic acid acting for two and a half minutes) happened to be a bad tube of agar—very watery—and this probably accounts for the slight irregularity.

HOSPITAL SATURDAY AT NEWTON ABBOT.—£190 were received as a result of the recent Hospital Saturday collections at Newton Abbot (Devon), the amount being much in excess of the total of any previous year.

HABITUAL INEBRIATES.—At the meeting of the Monmouthshire Discharged Prisoners' Aid Society held at Newport Town Hall on July 28th it was reported that five women belonging to Newport had been discharged from the Brentry Homes and in each case within seven days of their discharge they had been reconvicted of drunkenness.

A CAUSE OF INTESTINAL OBSTRUCTION AFTER GASTRO-ENTEROSTOMY.

BY H. M. W. GRAY, M.B., C.M. ABERD., F.R.C.S. EDIN.,
SURGEON TO THE ABERDEEN ROYAL INFIRMARY.

THE patient, an unmarried woman, aged 31 years, was seen by me in consultation on the evening of May 15th, 1904. For some months she had suffered from severe "indigestion," intense epigastric pain, radiating to the back, occurring almost immediately after taking food. She had not vomited during this period but had noticed that the stools were very dark on several occasions. On May 14th she became suddenly collapsed and vomited a large quantity of blood. In spite of medical treatment the hæmatemesis was repeated several times, although not to such a large extent. The bowels were opened and the stool contained a large quantity of blood. On the evening of the 15th she became again so collapsed that death was thought to be imminent. She had recovered somewhat before I saw her. Her pulse was very feeble and irregular. It was occasionally as low as 120 but was usually considerably quicker. It was estimated that she had vomited between two and three pints of blood. By percussion of the shifting dulness, limited to the gastric area, it was found that the stomach contained at least a pint of blood. Nothing had been given by the mouth since the onset of the attack. These facts, considered along with the presence of the large quantity of blood in the stool, made the total blood lost amount to probably between four and five pints. It seemed that the bleeding had stopped and it was thought advisable to wait until the morning, as transference to hospital would have had a severe effect on the patient in her perilous condition. Morphine was given hypodermically and a careful watch was set. She passed a fairly good night but early the next morning she again vomited blood and was removed to hospital. On arrival there she vomited a small quantity of fresh blood, so an operation was carried out at once.

Chloroform was administered and three pints of saline solution were slowly infused into a vein at the elbow. The stomach was exposed by a free incision. Blood was seen to be present in a large amount in the stomach and in the whole length of the intestines. Nothing else abnormal about the stomach was detected by inspection or palpation. The blood was squeezed through the pylorus, the stomach was opened posteriorly and its interior was inspected. No ulcer was seen. A posterior retrocolic gastro-enterostomy was performed. Sutures alone were used.

The patient vomited early on the second day after operation. The vomit contained a small amount of "coffee-ground" material and was foul smelling. Five minims of liquid extract of cascara sagrada were given every hour but after three doses she became sick so it was intermitted for 12 hours and then begun again. An enema was given on the evening of the day of operation to clear the rectum; a tarry motion resulted. Every second day thereafter an enema was administered. On the fourth day the stool was free from blood.

About noon on the sixth day she complained of intermittent griping pain in the abdomen. This continued until the evening when it abated somewhat. It was thought probably to be due to flatus, although previously to this a turpentine enema brought away neither flatus nor fæces. A small dose of morphine was given. She was quite comfortable till 3 A.M. on the morning of the seventh day, when the pains began again and increased in severity as the effect of the morphine passed off. Vomiting occurred on two occasions. At 9 A.M. another turpentine enema was given but with no result. The facial expression was now somewhat drawn and anxious. Vomiting continued at intervals but the pains subsided considerably after the enema. The temperature and the pulse were unaffected. The latter had become reduced in frequency from 144 on the day of operation to 100–110.

Intestinal obstruction was diagnosed and immediate operation was advised. This was declined. I prescribed two drachms of magnesium sulphate by the mouth and eight minims of liquor strychninæ hypodermically. The immediate effect of this was to produce severe colicky pain and acquiescence in operation which was carried out at 4 P.M. It was then found that practically the whole of the small intestine had insinuated itself from left to right through the ring formed at the first operation by the peritoneum of the under layer of the mesocolon, that lining the posterior abdominal wall and forming the upper layer of the mesentery, and completed anteriorly by the gastro-jejunal junction. It was easily pulled back and the ring closed by suturing the under layer of the mesocolon to the upper layer of the mesentery to prevent recurrence of the hernia. Strangely enough, there was enormous distension of the colon with gas. It was found to be quite patent down to the rectum. It was accordingly punctured by a trocar and cannula and the gas let out. A silk suture was inserted to close the opening made by the trocar and a piece of omentum was stitched over that. The gastro-jejunal junction was found to be perfect. The patient vomited once during the evening after the operation but thereafter recovery was uninterrupted and she left the hospital on June 13th. She was seen on July 5th, when she looked extraordinarily well. She had suffered no pain, no indigestion, and no vomiting since her dismissal. The stools had been normal. She now made no restrictions in her diet.

I can find no record in the literature on gastro-enterostomy of such a post-operative condition. Moynihan mentions the occurrence in one of his cases of hernia into the lesser peritoneal sac through the opening, made at the operation, in the mesocolon. This, I think, was discovered post mortem. Both these forms of hernia can, of course, be prevented by the insertion of a few sutures. My action in administering drugs to produce increased peristalsis and pain in order to promote acquiescence in operation has been called in question by some of my medical brethren. I have no doubt of its justifiability. Had I left the patient alone and allowed the pains to develop in strength gradually she probably would not have agreed to operation for another 24 hours when her condition would have been much worse. In cases of acute intestinal obstruction there is often a lull in the symptoms after the storm of onset. This lull is too frequently augmented and prolonged by the use of morphine. I have also frequently noted an abatement after an enema has been administered and it was during such a lull that the subject of these remarks refused operation. For some years I have hinted that such a use of intestinal stimulants might be made and that the result would strengthen the diagnosis in cases of suspected intestinal obstruction but I should by no means advocate their use unless in very exceptional cases.

Aberdeen.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF CONGENITAL ABSENCE OF ONE TIBIA.

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A CONGENITAL condition of deficiency or total absence of one or more of the bones of the body is not uncommon and in most cases results in the production of great deformity. Total absence of the tibia would appear to be met with very rarely, the radii being the bones which are most frequently wanting. Cases of absent tibia have been recorded by Bland-Sutton in the Transactions of the Pathological Society of London, vol. xliii., p. 124; by Treves in his "System of Surgery"; and by Parker in THE LANCET of May 27th, 1882, p. 870. For permission to publish the present case I am indebted to Mr. A. S. Barling, honorary surgeon to the Royal Lancaster Infirmary. In the cases described by the above observers the condition was associated with other pathological features, as absence of the radii and the presence of supernumerary digits. In this case the patient was a man, aged 27 years, of short stature and slight build, and the other limbs did not present any abnormal features. The appearance of the deformed limb is well seen in Fig. 1 and the actual outline of the bones is shown in the skiagram (Fig. 2). The thigh was wasted, the muscles being poorly developed; the patella was absent and no signs of the tibia could be made

out on examination. The inner border of the leg presented a marked concavity directed inwards; the fibula was prominent and much curved. As the limb was allowed

FIG. 1.

Showing the condition of the limb in a case of congenital absence of the tibia.

FIG. 2.

Skiagram showing the outline of the bones in the same case.

to hang down the plantar surface of the foot looked forwards, the hallux pointing outwards. The foot itself was well developed. The skiagram shows the bones of the tarsus very much crushed together. The man earned his living by street hawking, and although he was unable to wear any form of artificial limb he firmly refused to consent to amputation.

Lancaster.

EYE-STRAIN AS A CAUSE OF HEADACHE.

BY S. W. SUTTON, M.D., B.S. LOND.

ATTENTION having been recently drawn to this subject by Mr. Simeon Snell and others I am induced to send a note of a case I have recently seen for the sake of emphasising this point, especially that in spite of their simplicity and frequency the nature of such cases is apt to be overlooked.

I was asked to see a little English girl, aged nine years, whose sole complaint was said to be frequent headache for more than a year which would not yield to treatment. Her father assured me that it was distressing to the whole family to see such a little girl suffering so much from her head. The headaches had always been considered as "due to the liver" but medicines had given no relief. What struck me almost immediately at my first interview and gave me my first clue to the true nature of the case was this: here was a little well-nourished healthy looking girl who complained of absolutely nothing but headache and whose eyes were frequently blinking on account of spasm of the orbicularis muscles. Carefully avoiding anything like a leading question I asked the child—"Have you any idea what causes your headache?" to which she replied—"It always comes on after lessons and it is always worse on Tuesdays." The idea was at once scouted by the family and the governess said that such simple and short lessons as the child was put to could not possibly cause headache, although it was admitted that she habitually did more lessons on Tuesday than on other days, so I explained that while lessons meant to them "mental effort" to me the term suggested "ocular effort." After the use of atropin I found in each eye hypermetropia of 1·5 D. and prescribed spectacles accordingly, with the happy result that all headache has entirely ceased.

This case suggests one other point which is worth emphasising—viz., that when ordering spectacles we have to prescribe a spectacle-frame as well as certain lenses. I found that this little girl required a frame with the same breadth of bridge that I myself require, her eyes being unusually far apart.

Dharmsala, Punjab.

NOTE ON DR. LANDMAN'S WIRE ARTIFICIAL VITREOUS.

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AMONG the various means which have been introduced for forming an artificial vitreous after excision of an eyeball I think the wire spheres of Dr. Landman of the United States of America deserve recognition. It is claimed for them (1) that they do not require any special instrument for their introduction, as in the case of the smooth glass or metallic spheres; (2) that their retention within the tissues is insured by granulations springing up between the meshes; and (3) that they are very light. They are made in three sizes, as in the illustration, and of pure silver wire. I have

used them in about ten suitable cases during the last few months and my experience is that they are very easily inserted, cause little or no irritation, and the after-results as regards movement are very satisfactory. The method I have adopted is after excising the eye to pass a purse suture of catgut around Tenon's capsule, using a plug of lint saturated with adrenalin to arrest hæmorrhage, insert the

wire sphere, and draw the ends of the purse suture together and tie them. I then suture the conjunctiva over the buried sphere. These spheres have been made for me by Messrs. Down Brothers, St. Thomas's-street, Borough.

Plymouth.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

MILL-ROAD INFIRMARY, LIVERPOOL.

A CASE OF TROPICAL ABSCESSES OF THE LIVER WITH SOME UNUSUAL COMPLICATIONS.

(Under the care of Dr. NATHAN RAW.)

FOR the notes of the case we are indebted to Dr. Ernest N. Cunliffe, assistant medical officer.

A man, aged 27 years, a discharged soldier, was admitted to the Mill-road Infirmary, Liverpool, on Feb. 17th, 1904, complaining of persistent diarrhœa, severe abdominal pain, and a troublesome cough. He stated that he was in perfect health when he landed in England on Jan. 14th, 1904, after a six years' residence in India. The day of landing he was seized with dull, aching pains in the upper part of his abdomen accompanied by diarrhœa. His bowels were moved eight or nine times daily; he had never noticed any blood or slime in the motions. He did not lie up till a week after the onset of his illness, but he was then obliged to take to his bed on account of the increasing severity of the pains. About this time he first began to be troubled with cough and expectoration; he was quite sure that he had had the diarrhœa a clear week before the cough commenced. On two occasions he had attacks of epistaxis but he had not been troubled with headache or deafness. There had been no rigors but he perspired a little at nights. The diarrhœa, abdominal pains, and cough continued up to admission to hospital. His previous medical history was good. He had never had syphilis, malaria, or dysentery, and he was confident that during his residence in India he had never been troubled with diarrhœa or hæmorrhage from the bowel.

On examination it was evident that the man was acutely ill. He was well nourished and well developed. The face was flushed and the tongue was dry and thinly coated with a greyish fur. The pulse averaged 120 beats per minute and was of low tension but of fair volume. Respirations averaged 30 per minute. His temperature on admission was 101·8° F. Examination of the abdomen showed general distension with pain and tenderness in the right hypochondrium. No rose spots were present. The lower ribs on the right side were unduly prominent and the superficial veins coursing over the right costal margin were distended. The lower edge of the liver was defined as running two inches above the umbilicus. The surface of the liver could not be palpated with certainty on account of the hepatic tenderness but appeared to be of normal contour. The spleen could not be felt. The hepatic dulness extended from the third intercostal space to a level two inches above the umbilicus in the right nipple line. The splenic dulness was not increased in extent. On examination of the chest the cardiac impulse was found to be situated in the sixth intercostal space, two inches outside the nipple line. The cardiac sounds were of good quality with no bruits. On inspection the right side of the chest was more distended and moved less freely than the left. On palpation vocal fremitus was completely absent over the right base and impaired in the interscapular, axillary, and suprascapular regions of the same side; anteriorly and on the left side it was normal. There was dulness to percussion of the right base with impairment of resonance of the right interscapular and suprascapular regions. The right axilla was completely dull. Skodaic resonance was present over the anterior aspect of the right chest as far down as the third intercostal space. The left chest gave a normal note throughout. On auscultation of the right side of the chest breath sounds were absent over the base and diminished in the supra- and interscapular regions. Anteriorly, over the area of Skodaic resonance, puerile breathing was audible. Faint bronchial breathing, bronchophony, and whispering pectoriloquy were heard over the front part of the axilla. Ægophony was nowhere observed. The only adventitious sounds were scanty pleuritic rubs heard anteriorly in the third intercostal space. The auscultatory signs of the left side of the chest were normal. Mensuration showed an increase in girth of three-quarters of an inch of the right side over the left.

An aspirating needle was introduced into the eighth intercostal space on the right side, just outside the angle of the scapula, but only a few drops of blood were obtained, the needle apparently entering solid substance. On introducing the needle a second time about two inches lower down a small quantity of blood-stained pus of a thin consistency was obtained, but free evacuation of the pus could not be obtained. It was decided, therefore, to resort to surgical treatment. The general condition was one of increasing gravity. The diarrhœa still continued, the stools being of a semi-fluid consistency but only on one occasion did they contain shreds of mucus. Blood was never present. The temperature ran an irregular course, alternating between 98° and 102°. The patient was freely stimulated and on Feb. 20th was taken to the theatre and lightly anæsthetised by equal parts of chloroform and ether. Dr. Nathan Raw performed the operation. An exploring syringe was introduced in the right midaxillary line through the ninth intercostal space and a quantity of yellow-coloured pus was withdrawn. The overlying skin was incised and the pleural cavity was opened and about half a pint of sweet-smelling pus was evacuated. Introducing a finger through this opening it was obvious that a localised cavity lying between the diaphragm and the chest wall had been opened. The dome of the diaphragm was evidently pushed up to a considerable extent. A portion of rib was next excised and an opening was made in the diaphragm, when about one and a half pints of darker-coloured pus escaped from a large abscess in the substance of the liver. Examination of the chest showed that the heart had not, however, completely returned to its normal position in spite of the evacuation of such a large quantity of pus and an area of dulness still remained in the axilla. The patient, who up to this point had stood the operation well, now began to show signs of collapse and therefore a large drainage-tube was introduced through the opening in the diaphragm and he was taken back to the ward. He quickly recovered from this temporary collapse and next day his general condition was wonderfully improved. His breathing, though easier, remained somewhat embarrassed and the dulness of the axilla persisted and the cardiac impulse was still located outside the nipple line. He was progressing favourably, when suddenly, on Feb. 22nd, two days after the operation, a profuse discharge of blood, some clotted, some freshly shed, took place from the rectum. A large amount of mucus was mixed with the stool. An enema of starch containing 30 minims of tincture of opium was given and 30 minims of turpentine were administered by the mouth. This treatment checked the hæmorrhage for several hours, but a second attack of bleeding even more severe than the former occurred and though adrenalin hydrochloride was given the patient died from collapse before intravenous injections of normal saline solution could be performed.

Necropsy.—At the post-mortem examination it was found that the lower bowel, especially the cæcum and the colon, was the site of acute dysenteric ulceration, the mucous membrane being acutely inflamed and covered with a thick deposit of blood-stained mucus. The small intestine was healthy. The liver was considerably enlarged and weighed three and three-quarter pounds. In the right lobe were situated two tropical abscesses. The larger one was of about the size of a cocoanut and had been opened at the operation. It was situated on the upper and lateral aspect of the liver and had become adherent to the diaphragm. It still contained a small quantity of rather thick pus, which had not the chocolate colour so characteristic of tropical abscesses but was of a dark yellowish colour. The other abscess was of about the size of a Tangerine orange and was situated just above the gall-bladder on the anterior aspect of the liver and contained pus of similar characters to

that found in the larger one. The pus was examined and was found to contain streptococci but no definite amœbæ coli. In the right pleural cavity an interesting condition of affairs was revealed. In its lower part was a small localised empyema, lying between the right dome of the diaphragm and the chest wall and cut off superiorly by dense adhesions from the general pleural cavity. This empyema had been opened at the time of the operation. It had evidently corresponded roughly with the position of the hepatic abscess, being separated from it by the diaphragm. In the upper compartment of the pleural cavity a quantity of perfectly clear, greenish fluid characteristic of serous pleuritic effusions was found. The right lung was floated upwards and forwards, its lower lobe being partially collapsed. The left side of the chest was normal both as regards the lungs and pleura. The heart and other organs were healthy.

Remarks by Dr. CUNLIFFE.—This case presents several features of interest both as regards symptomatology, diagnosis, and complications. It is somewhat unusual for a case of tropical abscesses to run so acute a course. The absence of any history of previous dysenteric trouble is also interesting. When first examined the diagnosis evidently lay between tropical abscess and empyema. The physical signs were consistent with either. The early occurrence of diarrhœa before any chest trouble was observed favoured the former diagnosis. Enteric fever was excluded by the absence of rose spots, enlarged spleen, headache, and by the appearance of the tongue. The termination of the case was unusual, for it is rare for death to take place in dysentery due to sudden profuse hæmorrhage. The most interesting feature, however, is the occurrence on the same side of the chest of an empyema and a pleuritic effusion. The right pleural cavity had evidently been divided into two compartments by dense adhesions forming between the pleura covering the dome of the diaphragm, and the pleura lining the inside of the chest. In these separate compartments effusion had taken place; in the upper one it was of a serous nature, but the position of the lower compartment separated from the hepatic abscess by the diaphragm had caused the contents of the lower one to be of a purulent nature. The empyema only was tapped at the time of the operation and the presence of the pleuritic effusion in an upper compartment explains the dulness persisting in the axilla and the failure of the heart to return to its normal position. I have ventured to record this case because it illustrates several points of interest occurring in a disease which in this country we have not often the opportunity of observing in an acute form. I am indebted to Dr. Nathan Raw for his kind permission to publish these notes.

PRETORIA HOSPITAL.

A CASE OF ACUTE INTUSSUSCEPTION IN A CHILD FIVE MONTHS OLD; OPERATION; RECOVERY.

(Under the care of Dr. ALFRED W. SANDERS.)

THE patient, a healthy breast-fed male child, was taken suddenly ill about 1 o'clock on Jan. 4th, 1904, and Dr. Sanders was called to see him the same day at 7 P.M. He had attended the mother during her confinement and had not since seen the child but was told that except for occasional slight constipation he had been quite well. The history of the onset was as follows. The child had during the morning been in his usual good health and his bowels had acted naturally. While he was taking the breast he suddenly began to cry as if in pain, turned very pale, and shortly afterwards vomited. He retched and vomited at intervals after this and passed two motions which were rather green and slimy but contained no blood. He refused the breast, cried and whined at intervals, and at other times lay quite still. When Dr. Sanders saw him at 7 o'clock he was still pale with a bluish tinge about the lips. The pulse was 160 and the temperature was 101·5° F. The pain was evidently paroxysmal and during the attacks he writhed about and cried pitifully. On examining the abdomen—which was somewhat flattened—a tumour lying above and to the right of the umbilicus was readily detected. The diagnosis of acute intussusception having been made Dr. Sanders advised a consultation and recommended immediate operation. Dr. G. Thornton, a colleague at the hospital, kindly saw the case within a short time and came to the same conclusion. The child was taken at once to the Pretoria Hospital and at 9 P.M. Dr. Sanders operated, Mr. J. S. P. Stewart assisting and Dr. Thornton giving the chloroform. An incision was made just to the right of the middle line and extending one and a half inches above and below the umbilicus. This situation was chosen as being that most likely to give ready access to the tumour with the least exposure and manipulation of the abdominal contents. The intussusception was easily reached and when brought down into the wound was seen to be of the ileo-cæcal variety, the tip of the appendix just presenting at the lower part. Reduction was effected with moderate ease by the invaginated portion being expressed through the sheath. The portions of bowel affected were considerably congested and Dr. Sanders did not think the condition could have been relieved by injections. The wound was closed with silkworm gut sutures passing through all the layers of the abdominal wall. The child stood the operation, which lasted 15 minutes, very well. He was not sick after it and took the breast one hour later. Being restless during the night he was given two one-minim doses of tincture of opium. On the morning following the bowels acted, the motion consisting almost entirely of blood and mucus, and the motions for a day or two were greenish in colour. The recovery was gradual and complete; the temperature ranged between 102° and 103° on the next day but afterwards declined gradually, reaching the normal on the fifth day, while the pulse-rate fell from 144 to 112. The abdomen did not become distended and the bowels acted naturally. No drugs except two one-grain doses of Dover's powder—which were given to induce sleep—were needed. On the 11th the patient was discharged quite well and the stitches were removed on the 16th, the wound having healed completely. A tight binder was worn for some time and now the scar is quite sound. Dr. Sanders was unable to assign any cause for the occurrence of the intussusception.

Reviews and Notices of Books.

Practical Gynæcology: A Comprehensive Text-book for Students and Physicians. By E. E. MONTGOMERY, M.D., Professor of Gynæcology, Jefferson Medical College; Gynæcologist to the Jefferson Medical College and St. Joseph's Hospitals; Consulting Gynæcologist to the Philadelphia Lying-in Charity. With 570 illustrations, nearly all of which have been drawn and engraved specially for this work, for the most part from original sources. Second revised and enlarged edition. London: Rebman, Limited. 1904. 8vo, pp. 900. Price 25*s.* net.

IN the second edition of this work Dr. Montgomery has carried out an extensive revision of the contents. A large part of the work has been rewritten and its size has been increased by some 70 pages. The author in two new sections discusses the value of the Roentgen rays and the Finsen light in the treatment of gynæcological affections. He comes to the conclusion arrived at by most writers on this subject that so far their application in this branch of medicine is a very limited one indeed; whether in the future it may become more extended remains to be seen. A large number of new figures have been added, replacing in many instances figures which were hardly worthy of the book. In the chapter on Endometritis a series of illustrations representing the microscopical appearances are given and these are a great improvement on the old ones. We notice similar additions in the section on diseases of the tubes and cancer of the uterus. The interesting subject of extra-uterine gestation is very fully discussed and this chapter has been largely rewritten. Primary abdominal fœtation is not accepted by the author as proved and he quotes the case of Tuholske where the placenta was imbedded on the liver as an example of secondary implantation. In cases of advanced extra-uterine gestation where the child is living the author recommends waiting until the eighth month so as to afford the fœtus the best opportunity of being born alive. He considers, as the fœtus may be well developed, that operation

should be postponed to such a stage as will give it an opportunity of a continued existence. The statement on p. 637 that the occurrence of fibroid tumours with pregnancy entails a maternal mortality of 50 per cent. and a fœtal loss of 75 per cent. is not quite correct. It would appear as if the author were quoting the results obtained before the introduction of antiseptics. For example, Susserott, writing in 1870 of 147 cases, met with a maternal mortality of 53 per cent. and a fœtal mortality of 66 per cent., while Lefour in 1880 had a maternal mortality in 286 cases quoted by him of 49 per cent. and a fœtal mortality of 77 per cent. Pinard, however, writing in 1901, quotes 84 cases of this complication with a maternal mortality of only 3·6 per cent. and a fœtal mortality of 23·6 per cent.—very different figures to those quoted by Dr. Montgomery and no doubt representing much more accurately the true results of cases of pregnancy and labour complicated by fibroid tumours. In our experience the danger of this condition is often grossly exaggerated in the writings more especially of gynæcologists who are apt to forget the large number of cases seen by the obstetrician which occur with no complications at all. In the section on the operative treatment of fibroid tumours the author has added a description of the various methods of performing the operation of panhysterectomy, and no doubt in this case he is wise, since it is probable that this operation will be considered in the future the best one for dealing with these tumours. The work of revision seems to have been carried out carefully and the book is a fair example of its class, but there is no reason why it should replace the usual text-books with English students.

Studies from the Rockefeller Institute for Medical Research. Reprints. Vol. I. 1904.

THE Rockefeller Institute for Medical Research was founded in 1901 for the purpose of promoting original research into the causes and treatment of disease. From the introduction to the first volume of studies carried out under the auspices of this liberal endowment we gather that during the years in which the organisation of the institute was being perfected and buildings were being erected the funds have been employed in aiding researches already in progress and encouraging others which seemed promising. In consequence of the grants thus given many workers have been enabled to carry out investigations in various American and European laboratories. The results of 27 of these investigations are recorded but no attention is drawn to what is perhaps the most important aspect of the application of the funds of the institute in this way—viz., the creation of a body of trained workers whose ability has already been put to the test and who will be able to occupy and to turn to account the resources of the laboratories now approaching completion.

The researches recorded have already been published in various periodicals. They cover practically the whole field of experimental medicine. From the standpoint of the practice of medicine five papers on Dysentery are of moment. These seem to leave little room for doubt that acute dysentery, whether sporadic, institutional, or epidemic, in all parts of the world is due to one and the same organism —the bacillus dysenteriæ (Shiga). The results of a study of the acid-resisting group of bacteria have also direct bearing on the practice of medicine and hygiene. As is well known, this group includes also the tubercle bacillus. The authors of the paper hold the designation "bacillus" to be a misnomer and assert that actinomyces would often be the more correct term. Some of the acid-resisting bacteria found in milk, butter, and so on, are capable of causing nodular lesions suggestive of tubercles but distinguishable from them. The majority of these bacteria may be identified from true tubercle bacilli by their inability to resist decolourisation by a 30 per cent. solution of nitric acid in water. We cannot fail to be impressed by the risk of attaching exaggerated significance to so-called specific staining reactions. Much confusion and needless repetition of work would be avoided if the fact is recognised that there is no specific staining reaction either for bacteria or for cellular structures, not even excepting the chromatin elements *par excellence* of the cell.

The papers of highest theoretical promise refer to experimental glycosuria and the new methods which have been applied to the study of this disease. Other researches on cobra venom, bacteriolysis, and agglutination, and various contributions to physiological and pathological chemistry complete a valuable volume of reprints. It is to be hoped that the Rockefeller Institute will fulfil the object of its generous creator and succeed in discovering the investigator who is born, not made, and who only requires proper facilities to enable him to apply his genius to the advancement of medical science and practice.

Text-book of Histology, including the Microscopic Technic. By Dr. PHILIPP STÖHR, Professor of Anatomy at the University of Würzburg. Translated from the tenth German edition by Dr. EMMA L. BILSTEIN. Edited, with additions, by Dr. ALFRED SCHAPER, Professor of Anatomy at Breslau. With 353 illustrations. London: Rebman, Limited. 1904. 8vo., pp. 485. Price 14*s.*

THE first English Edition of this authoritative work was made from the seventh German edition in 1898. The additions since that date in this translation which has been made from the tenth German edition cover about 60 pages and the increase in the number of illustrations is 61; several of the new illustrations are coloured. The additional chapters deal with the Form of Glands, based on the investigations of Maziarski; the Histological Characters of the Spleen, based on the researches of Weidenreich; of the Urinary Bladder, based on the researches of Lendorf; the Seminal Passages, following the researches of Felix; and the Development of the Hairs, based on the author's researches. The morphology of the cell and the structure and chemistry of the tissues are more fully given than in the previous edition. The technical part of the application of formol and its mixtures is given in some detail. The general arrangement of the chapters is to describe an organ or tissue—as, for example, the kidney, lung, bone, or thymus—reference being made to the illustrations. Directions are then given instructing the student in the mode of hardening or, if need be, of decalcifying, staining, and mounting. The additions are skilfully interpolated and are not unnecessarily prolix. Thus, in the previous edition, speaking of the development of bone and of the origin of marrow, it is merely stated that the primary marrow cavity is a little bay filled with blood-vessels and with cells, the latter in the further progress of development becoming either marrow cells or fat cells or osteoblasts—that is, bone-forming cells. In the new edition the process is more fully and exactly described in the following terms, the description being accompanied by new coloured woodcuts: "The marrow cavity is now a bay-like space filled with blood-vessels and with primary bone marrow, that is with anastomosing branched connective-tissue cells. Some of these cells—the osteoblasts—grow rich in protoplasm and apply themselves in the manner of a one-layered epithelium to the walls of the marrow cavity. These produce bone; meanwhile leucocytes appear in ever-increasing numbers and finally form the chief mass of the cellular elements of bone marrow, therewith converting the primary marrow into the red marrow. Some of the branched connective-tissue cells retain their form and later with a fine fibered connective

tissue constitute the supporting framework of the bone marrow. Others of these cells become fat cells." Though Sharpey's name is not mentioned but little, if any, advance appears to have been made in osteogeny since his observations were published. The following gives one of 20 methods of staining preparations and describes von Gieson's method. "Treat sections [of any tissue] with Hansen's hæmatoxylin for 30 minutes. Place the overstained sections in *a*, five cubic centimetres picrofuchsin, 1–3 minutes; *b*, five cubic centimetres distilled water, 10–13 seconds; *c*, five cubic centimetres, 90 per cent. alcohol, one minute; *d*, five cubic centimetres absolute alcohol, two minutes; *e*, five cubic centimetres xylol, and when thoroughly cleared *f*, xylol balsam. Result, connective tissue shining red, elastic tissue and muscular fibres yellow, and nuclei brown." Further directions are given to fix the colours. Professor Stöhr's work is a valuable one and may be read with advantage with one or another of the histological text-books of home production.

Immune Sera, Hæmolysins, Cytotoxins, and Precipitins. By Professor A. WASSERMANN, M.D. Authorised translation by CHARLES BOLDUAN, M.D. London: Chapman and Hall; New York: John Wiley and Sons. 1904. 12mo, pp. ix.–76. Price 4*s.* 6*d.* net.

IN the preface to this little book the author with characteristic modesty explains that his object is "to introduce my colleagues to the essentials of the subject," and a careful perusal of the 76 small pages of fair-sized print will undoubtedly convince the reader that they are admirably adapted to that end. To the busy physician who sees that so much attention is being devoted to the elucidation of problems connected with the constituents of immune sera, no less than to the student just entering on the study of comparative pathology, this work will be very welcome, for in short, clear sentences illustrated by well-chosen experiments dealing with fundamental facts Professor Wassermann sets out the chief of the elementary data relating to hæmolysins, agglutinins, cytolysins, and so on, and their antibodies, whether met with in nature or produced as the result of animal experimentation; he also demonstrates the close family relationship existing between these complex bodies and explains their modes of action and interaction.

Dominated as the whole subject of serum immunity is by that brilliant conception of Ehrlich—the side-chain theory of immunity—it is not surprising to find that the author, who has himself done much good work on similar lines, gives his almost unqualified adherence thereto and employs it, with a clearness of diction as pleasant as it is intelligible, to explain the various phenomena associated with hæmolysis and cytolysis. Like Ehrlich, Professor Wassermann supports the view of the plurality of complements, interbodies, and the like; and also (p. 24) the theory of the formation of tetanus antitoxin by the cells of the central nervous system, a theory upon which much doubt has been thrown by the recent work of Meyer and Ransome.

Perhaps the most interesting and at the same time the most suggestive section in the book is that dealing with the cytotoxins and their antibodies, for the researches of von Dungern, which have resulted in the production of an anti-serum capable of destroying the ciliated tracheal epithelium of the ox, at once lead to speculation as to whether it is in this direction that we must look for a therapeutic agent in the treatment of epithelial cells of pathological origin. The practical applications, too, of the precipitins are also touched upon and the author gives a short account of his method of differentiating albumins, laying particular stress on its value to the medical jurist in differentiating the blood of man and closely allied apes from that of other mammals; and to the food inspector in detecting the substitution of horse-flesh for beef. To the translator we would offer our congratulations on the manner in which he has presented Professor Wassermann's lectures to the English reader; at the same time we wish he could have seen his way to adding an index as well as the very complete table of contents.

Atlas of the External Diseases of the Eye. By Professor Dr. O. HAAB of Zürich. Authorised translation from the German, edited by G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania, U.S.A. With 98 coloured lithographic illustrations on 48 plates. Second edition. London, Philadelphia, and New York: W. B. Saunders and Co. 1903. Crown 8vo. Price 13*s.* net.

THIS work is a translation of one of the hand atlases of Professor O. Haab and is a companion volume to his "Ophthalmoscopy" which we had recently occasion to review in these columns. That work was devoted to the representation of the internal diseases of the eye as seen with the ophthalmoscope; the present one deals with the external diseases of that organ and will probably prove more generally useful and attractive. The general practitioner, if unfamiliar with the ophthalmoscope or indisposed to rely upon his own diagnosis of the internal affections of the eye, such as optic neuritis, optic atrophy, or choroidal trouble, may, without derogating from his position as a man of sound information, recommend a patient with failing vision to apply to an expert, but such patient would call his general knowledge in question were he unable to recognise and to treat an external disease which is obvious to the most casual observer. The plates before us enable him to do this with ease. There are few of the commoner affections of the eye and its appendages, except, perhaps, nævus, which are not here represented and generally speaking with great care and fidelity to nature. They have been executed at the lithographic institute of Reichhold of Munich from drawings made by Mr. J. Fink and they are so true that it is not difficult to name them without reference to the legend on the opposite page. Amongst the best are those exhibiting the various forms of conjunctivitis which accompany or follow gonorrhœa, diphtheria, and other infectious diseases. The text, which extends over 280 pages, is a running commentary on the drawings with, of course, explanations of the appearances they present. It contains a good section entitled "Detection of Malingerers." Simulated amblyopia is admittedly a very difficult problem to solve if the supposed impairment of vision is only slight and the deceiver be careful to avoid exaggeration in his statements, or if he knows something of the tests to which he will be subjected. Probably the employment of prisms scientifically applied is the most effective method of exposing the cheat. Much credit is due to Messrs. Saunders for presenting to the profession an English translation of so useful a book.

LIBRARY TABLE.

The Care and Feeding of Children. By L. EMMETT HOLT, M.D. With an Introduction by ERIC PRITCHARD, M.D. Third edition. London: Sydney Appleton. 1904. Pp. 150. Price 2*s.* net.—Dr. Holt is so well known as one among the first authorities upon the diseases of children, their care, their feeding, and their upbringing that it seems superfluous to praise the little book now before us. Its sub-title is "A Catechism for the Use of Mothers and Children's Nurses," and this admirably describes the scope and aim of the work. It is written in simple language and nearly every imaginable point that can raise a doubt in the mind of one having the

care of a child appears to be discussed. The English reader may be reminded that the word "rare," p. 112, as applied to meat does not mean "uncommon" but simply "underdone." The section on feeding is altogether admirable and the whole book can be strongly recommended to those for whom it is written and to many young practitioners as well.

Murray's Handbook for Switzerland. Nineteenth edition. London: Edward Stanford. 1904. Pp. cvi.—555. Price 10*s.*—Murray's Handbook to Switzerland was first published 66 years ago and the present, the nineteenth edition, has been thoroughly remodelled and revised. These extensive alterations have been necessitated by the great changes which have occurred within the last few years in Swiss methods of travel, such as the opening of many mountain railways. No one, of course, can really test the excellence or otherwise of a guide-book without going to the places mentioned therein but the name of Murray is a guarantee for goodness in a guide-book and this tradition loses nothing by the publishing having been transferred to the house of Stanford. The book is full of information which is very clearly set out and the instructions to travellers at the beginning are very good and greatly enhanced by the presence of 34 maps and plans.

Devices and Desires. By P. H. LULHAM, M.R.C.S., L.R.C.P. London: R. Brimley Johnson. 1904. Pp. 211. Price 3*s.* 6*d.* net.—Mr. Lulham's verse is graceful and musical if not of a very high order and his ear but seldom fails him. But he has the faculty of painting landscapes in words, as in "November," "Red Dawn," and "A Winter Morning." We must say that we envy Mr. Lulham's poetic fancy which enables him to visualise such a charming rural scene as he gives us from the rattle of a milk-cart heard in the early morning. But we take it that he does not live in London. "Loss" is worthy to be set to music and the "Christmas Hymn" breathes the true spirit of Christmas.

JOURNALS AND MAGAZINES.

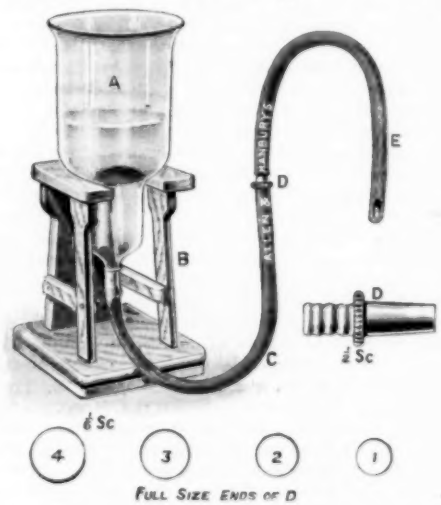
The Quarterly Journal of Microscopical Science. Edited by E. RAY LANKESTER, F.R.S., assisted by ADAM SEDGWICK, F.R.S., W. F. R. WELDON, F.R.S., and SYDNEY J. HICKSON, F.R.S. With lithographic plates. London: J. and A. Churchill. Vol. 48, Part I., July, 1904. Price 10*s.*—The articles contained in this number are: 1. On the Branchial Vessels of Sternaspis, by Edwin S. Goodrich, M.A. This is a careful description of the branchial vessels of this chætopod, adding to and correcting the statements of Rietsch and of Vejdovsky, with two plates. 2. The Middle Ear and Columella of Birds, by Geoffrey Smith, B.A., with seven figures in the text. 3. Notes on Rhabdopleura Normani, Allman, with a plate. 4. Some Observations on the Anatomy and Affinities of the Trochidæ, by W. B. Randles, B.Sc. Lond. The anatomy of this group of molluscs is given in full detail and there is a good bibliography. 5. The Anatomy of Pœcilochætus, Claparède, by E. J. Allen, D.Sc., with six plates and one figure in the text. This is an important memoir very well illustrated. 6. Notes on Sporozoa, by H. M. Woodcock, B.Sc. Lond. The author of this article gives the results of his examination of Klossiella muris, a new genus and species of Coccidiæ found parasitic in the kidneys of the mouse. It is extremely small.

THE *St. Bartholomew's Hospital Journal* of July 15th is a special number devoted entirely to the recent laying of the foundation-stone of the new buildings by His Majesty the King. A full account of the proceedings at the ceremony is given together with numerous illustrations and altogether the number forms a fitting memento of an auspicious occasion.

New Inventions.

AN IMPROVED APPARATUS FOR AUTO-LAVAGE OF THE STOMACH.

IN cases where regular washing of the stomach is necessary the operation will in most instances eventually devolve upon the patient himself and it becomes of the greatest importance to provide him with an apparatus which will make it as easy for him as possible. The disadvantages of the ordinary funnel set of apparatus have been pointed out by me elsewhere.[1] The funnel with narrow thick-walled stem and the glass connecting piece, which cannot be easily detached during use, import needless and gratuitous difficulties, but by a little modification and the addition of a stand in which the funnel can be placed, an arrangement can be assembled which can be used single-handed with great ease. There are several little points which are not usually troubled about by instrument makers but which make all the difference between a practicable and an impracticable device. In the first place, at no point must the calibre of the channel through which the contents of the stomach pass be less than that of the stomach tube. This is obvious, as otherwise one loses all the advantage of a larger tube. In the apparatus usually supplied by the shops there are two points which are narrower than the calibre of the stomach tube—i.e., the neck of the funnel and the glass connecting piece between the stomach tube and the rest of the apparatus. Secondly, it is often necessary to disconnect the stomach tube during the act of lavage to blow down it and to dislodge impacted fragments of food. This is impossible when the connexion is a piece of glass tubing often wired on. In the apparatus which I have devised and which my patients have now used for some time I have attempted to remove these disabilities and, I hope, with success. The apparatus consists of a



FULL SIZE ENDS OF D

funnel (A) of such a shape that it will sit easily upon the stand (B). The stem has a bore larger than that of the largest stomach tube and the use of a rubber tube (C) of such a size that it will fit easily over it is rendered possible by the large size of the proximal end of the connecting piece (D). The connecting piece (D) is furnished with a conical extremity to fit into the stomach tube, the end being sharp, and thus presenting no obstruction to the flow through it. In fact, if a connecting piece be selected the end of which is a trifle larger than the calibre of the stomach tube there will be an uninterrupted passage of the same size from the eye of the stomach tube right up to the funnel. These connecting pieces are made in four sizes, shown at (1), (2), (3), and (4). The most important novelty about the apparatus

[1] Manual of Intra-gastric Technique, p. 87.

is the weighted stand in which the funnel is placed whilst pouring the water into it. Both hands of the patient are left at liberty and he is enabled to go through the operation of lavage unaided without the least difficulty. The use of the stand will also be found of great assistance by the physician when washing out the stomach and no one who has once experienced the convenience of it will readily revert afterwards to the old method. The apparatus is manufactured by Messrs. Allen and Hanburys.

Harley-street, W. GEORGE HERSCHELL, M.D. Lond.

A NEW INHALER.

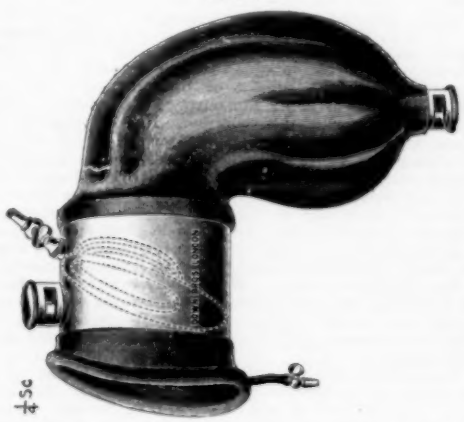
Messrs. Down Brothers have constructed for me a modification of Dr. J. F. W. Silk's excellent metal inhaler for A.C.E. mixture which should prove a convenience to practitioners desiring to have the facility for administering any of the usual anæsthetics without carrying a separate inhaler for each. As so modified the inhaler may be used for chloroform, mixtures of chloroform and ether, ether, ethyl chloride, or nitrous oxide. The chief alterations and additions which I have made in Dr. Silk's model are as follows.

1. For use with chloroform. (*a*) A tap inserted at the nasal side of the inhaler permits the metal part to be used as the face-piece of a Junker's inhaler by attaching the

FIG. 1.

tubing of the bellows to the tap, and I have had the holes of the lid enlarged so as to allow a total of more than a square inch of air-way through the lid. (*b*) If it be preferred instead to administer chloroform or mixtures of chloroform and ether by the drop method then the lid being opened a

FIG. 2.



piece of lint can be introduced and pressed down to the "drip diaphragm" (instead of the sponge, as in Dr. Silk's instrument) by means of an expanding spring-clip (*vide* Fig. 1).

2. For use with ether a detachable rubber cushion face-piece and detachable rubber bag are provided and by withdrawing the lint and spring-clip and inserting instead a sponge and attaching the bag and rubber face-piece (as in Fig. 2) an inhaler resembling an Ormsby's inhaler is produced, with the same advantages of wide bore and ease of respiration. The whole apparatus can be easily sterilised by boiling except of course the sponge.

3. With the apparatus thus arranged as a closed inhaler ethyl chloride may be administered alone or as a preliminary to ether by spraying it upon the sponge.

4. If it be desired to use the inhaler for nitrous oxide alone the sponge or lint is withdrawn and the rubber face-piece and bag are attached. The expiratory valve on the face-piece is opened and rubber tube conducting the gas is connected with the stopcock on the face-piece. If desired air may be admitted by opening the slot in the distal end of the bag. Respiration is particularly quiet and easy with this inhaler under nitrous oxide and I have also found it to work satisfactorily with any of the anæsthetics mentioned.

Bath. T. WILSON SMITH, M.D. Lond., M.R.C.P. Edin.

THE BRITISH MEDICAL ASSOCIATION.

MEETING AT OXFORD.

THE SECTIONS.

OBSTETRICS AND GYNÆCOLOGY.

FRIDAY, JULY 29TH.

THE acting President, Sir ALAN REEVE MANBY (East Rudham) called upon Dr. A. W. ADDINSELL (London) to read his paper entitled

A Further Contribution towards the Study of the Natural History of Tubal Gestation.

Dr. Addinsell reviewed the conditions bearing on the treatment of cases of tubal gestation, tubal abortion, and rupture in tubal gestation. He gave a careful description and classification of the clinical symptoms, diagnosis, and the various indications for operative and expectant treatment according to the circumstances of each case. The main contention of the paper went to show that often the pathological results and conditions following on tubal abortion and rupture, especially in the earlier months, tended to clear up and the patients to recover without the need for any surgical interference. He quoted cases illustrating his contention and ended an instructive and interesting paper with a complete and exhaustive list of the various phases and clinical conditions of cases in which an expectant line of treatment was called for and those cases in which operative interference was either immediately or remotely necessary.

Dr. C. E. PURSLOW (Birmingham) discussed the difficulties of diagnosis and the indications for and against operation and quoted an illustrative case in which ectopic gestation with its consequences were found on operation, although the case was one in which a diagnosis of ruptured gastric ulcer had previously been made.

Dr. E. T. DAVIES (Liverpool) thought that the main difficulties of deciding whether operation was called for or not rested on a diagnosis of not only the nature of the case but its exact conditions from time to time. Many cases undoubtedly recovered without any operation. Nevertheless, owing to the liability to subsequent trouble in the pelvis, he thought that operation should be carried out in the first place.

Dr. J. INGLIS PARSONS (London) thought that no definite statement could be made on the subject of any value unless details of 100 cases of those operated on at the time of onset and of those which had been left to recover spontaneously respectively were carefully prepared and tabulated. Speaking from his own experience and judging from the unsatisfactory after-results of cases which had spontaneously recovered, he was decidedly of opinion that operation in all cases should be the routine if there was a doubt.

Dr. ADDINSELL replied, supporting his contention of non-operative treatment in suitable cases.

A discussion then took place on

The so-called Ovarian Pain, its Causes and Treatment.

Dr. G. E. HERMAN (London) opened this discussion by a

crisp, short, and well-arranged paper. He indicated the seat of so-called ovarian pain as corresponding to a point two inches internal to the anterior superior iliac spine in the area of the distribution of the tenth dorsal nerve to the abdominal wall. Pain at this spot was elicited on deep pressure and it was therefore thought that the pain was due to pressure on the ovary. He did not think that the pain was really ovarian. He divided the subject into three—the pain, its nature and causes, and its treatment. The so-called "ovarian" pain might be one of four kinds. 1. Peritoneal pain—outside the scope of the discussion. 2. Reflected pain from visceral disease. Reflected pain might be caused by disease of the subjacent ovary; if so, what was the disease? This kind of pain might also, however, be the result of disease of the bowel, the liver, the gall-bladder, the kidney, the ureter, or the Fallopian tube. When produced by disease of the ovary it was pain and tenderness of the skin and not of the ovary. Other causes not associated with signs of disease might bring about this pain. Two conditions of the ovary had been said to cause chronic pain: (*a*) sclero-cystic disease; and (*b*) cirrhosis of the ovary. Ovarian cystic disease was usually painless. The second was due to changes in the ovary no more painful than was the same condition in the lung, liver, or kidney. The fibrous after-stage of chronic inflammation of the ovary was not painful. Shrunken ovaries were not painful. There was, therefore, no reason why fibrosis of the ovaries should cause pain. Their knowledge of the pathlogy of ovarian atrophy was not very exact. He knew of no way of distinguishing between the various conditions which really caused the so-called "ovarian" pain. 3. Neurasthenic pain. When the resistance of the higher nervous centres was weakened from any cause, pain might become aggravated and extended or it might be manifested without existing disease. Among the weakening causes were: (*a*) anæmia, (*b*) cachexia, (*c*) fever, and (*d*) menstruation. The neurasthenic cause of pain was the most frequent to come under the notice of the gynæcologist. 4. Hysterical pain. This kind of pain did not confine itself to anatomical boundaries, and other signs of hysteria were usually present. The treatment of so-called chronic ovarian pain rested on the removal of its cause, which was often other than the state of the ovary, or depended on neurasthenia or was a manifestation of hysteria. He quoted many cases to show the futility of operative treatment of so-called ovarian pain and laid stress on the return of the pain soon after removal of the ovaries, igni-puncture, resection, or simple removal of cysts. The neurasthenic condition, he recommended, should be treated by tonics, rest, food and sleep, and cessation from a mode of life and surroundings which were conducive to a return of the neurasthenia, and the hysterical pain by suggestion and moral treatment, which must be kept up or the cases would tend to relapse. Operations often acted suggestively to the hysterical patient and so did only temporary good and therefore were not desirable. The reflected pain called for treatment by attention to the evidences of the existence of substantive disease such as erosions of the cervix, uterine conditions, disease affecting the ovaries, tubal conditions, inflammations, adhesions, and the like. He strongly deprecated opening the abdomen for ovarian pain purely, or the removal of the ovaries for pain without strong evidence that the pain was due to actual disease remediable by abdominal section apart from the neuralgic condition of the ovaries.

Mr. F. B. JESSETT (London) said that in certain cases of pain complained of on the right side of the abdomen in the region of the tenth dorsal nerve distribution it was very difficult to distinguish between that referable to so-called ovarian pain and that due to chronic appendicitis. In the treatment of ovarian pain correct diagnosis of the real cause of pain in the locality was the very essence of the matter. He did not agree that there was no pain in sclero-cystic disease of the ovaries; the pain, indeed, was often acute, and if the ovary was removed the pain would disappear permanently. In many cases of cystic disease incision of the ovary and removal of the cyst were all that was necessary.

Dr. JOHN CAMPBELL (Belfast) thought that varicocele of the broad ligament ought to be considered as a cause of the so-called ovarian pain. Chronic constipation was also a cause of the pain and also tended to produce varix of the veins of the broad ligament, just as in the male constipation assisted to produce varix of the veins of the cord.

Dr. HERBERT SNOW (London) said that for the most part he entirely agreed with Dr. Herman's contentions. Constipation was often a cause of so-called ovarian pain. He did not think that hysteria and neurasthenia ought to be considered separately as a cause of ovarian pain. He also thought that irritable endo-cervicitis was often the cause of ovarian pain.

Mrs. F. N. STANLEY BOYD, M.D. (London), said that it was well known that the variability of pain in pelvic organs was common and would account for much of the diversity of opinion entertained by members of the profession. She thought that varix of the broad ligament was possibly a cause of pain, especially in nurses and those who had to do much standing about, as female shop assistants. When it was said that ovarian pain was not due to fibro-cystic disease peritoneal adhesions must be excluded as undoubtedly they were the cause of much pain in some cases. In spite of what was said against operation for pain there were cases which were much benefited by operation and others by general improvement of health following on change of air and tonics.

Dr. EWEN J. MACLEAN (Cardiff) wanted to know how the differentiation of the various conditions was arrived at, for in his experience the matter was no easy one, as must be freely acknowledged by all present. He did not think that the removal of ovaries for ovarian pain would in the future be so frequently resorted to, if at all. Resection was now more usual than removal of the ovaries. He thought, however, that resection was often as great a failure as removal of the ovaries. In his experience neurasthenic cases were just those in which the ovarian pain was most acute.

Dr. HEYWOOD SMITH (London) also discussed the relative merits of operative and non-operative measures and laid stress upon the regions of the abdominal wall in which the reflected pain was manifested.

Dr. CUTHBERT H. J. LOCKYER (London) said that he had examined undoubtedly painful ovaries which had been removed but found no microscopical or pathological change which could be assigned as the cause of pain and the organs were evidently functionally useful. Visceral pain was more marked on the left than on the right side of the body, perhaps because there was some constitutional weakness on the left. Frequent child-bearing and hyperlactation were a fruitful cause of ovarian pain and he quoted a series of cases to show that the ovarian pain was invariably in the left tenth dorsal nerve area on the abdominal wall. He thought that practical medicinal treatment was the correct line and not the operative method.

Dr. INGLIS PARSONS thought that ovarian pain *quâ* pain had really no practical diagnostic value as regards operative or non-operative treatment. The pain in neurasthenic cases was often rheumatic in nature. The ovary was more often not the cause of the so-called ovarian pain. He was of the opinion that in some cases sclero-cystic disease was the cause of pain and quoted a case which had gone from consultant to consultant where he removed a small hard fibroid ovary and cured the pain complained of.

Dr. A. F. H. RABAGLIATI (Bradford) contributed an interesting and valuable item to the discussion in the form of photographs of the variable seats in the body of pain in certain women the subject of ovarian pain. He also showed a series of plates illustrating the exercises necessary for the alleviation of this condition. He contended that the rheumatic and gouty diathesis was commonly the cause of ovarian pain. The condition was really in the nature of a gouty or rheumatic effusion into the stroma of the ovary, just as it was elsewhere in the body. He did not believe in operative procedures, as the disease was in the connective tissues all over the body. The Weir-Mitchell treatment was most useful in many cases, and also regimen in diet, aimed at the aforementioned causes, would be found most useful.

Dr. W. E. FOTHERGILL (Manchester) said that ovulation and ovarian pain were closely connected, as one or other ovary from month to month was usually the site of pain and the painful condition was usually attended with enlargement.

Dr. J. B. HELLIER (Leeds) advocated examination under an anæsthetic in cases of so-called ovarian pain. The main object to be aimed at was to try to cure the pain without operative measures if possible. Those cases in which the ovaries were removed for pain and in which the ovaries showed no evidence of disease were always disappointing in their after-results in every way.

Professor J. W. BYERS considered that the matter resolved

itself into three great questions: 1. Was there a cause in the ovary itself to account for the pain? 2. Was pain apart from disease a reason for opening the abdomen?—No. 3. If everything else failed ought the abdomen to be opened? That depended on circumstances very wide in scope. The best treatment was to improve the patient's morale and general health. He could not agree that varix of the broad ligament was a cause of pain, for in those cases in which the condition was operated on no cure had resulted.

Dr. F. W. FORBES-ROSS (London) said that as regards the seat of the so-called ovarian pain in the distribution of the tenth dorsal nerve on the abdominal wall he had observed that in affections of abdominal organs which were entirely covered with peritoneum reflected pain in disease was usually referred to the areas round about the umbilicus; on the other hand, where the organ was not entirely covered by peritoneum and some of its surface was in relation to the areolar tissue of the abdominal parietes the pain was usually referred to the locality of the abdominal wall immediately over the organ affected. If the ovary was regarded as an entirely peritoneal-covered organ then the area of the tenth dorsal nerve was properly the ovarian area and this tended to indicate the part played by peritoneal adhesions and sclerosis of the capsule of the ovary in causing pain reflected to the tenth dorsal segment. Often, however, the so-called chronic ovarian painful area was merged into the distribution of the eleventh dorsal nerve on the anterior surface of the abdomen, immediately above Poupart's ligament and around the opening of the external abdominal ring. This was well illustrated in such affections as pelvic cellulitis and conditions referable to the cervix and body of the uterus, for in these affections the area of the eleventh dorsal nerve was always the seat of pain. Attention to this would serve for correct estimation as to the origin of pain which was often not fundamentally ovarian. This was also often combined with pain in the tenth dorsal area and was often sympathetic in the ovarian region with a cause existing in the cervix and uterus. Dr. Herman had mentioned the need of attending to cervical erosions and Dr. Herbert Snow had remarked on endocervicitis as a cause of ovarian pain. He would add to the above the overdistended Nabothian cystic follicle, so frequently present and so often lightly regarded and neglected by the practitioner. Experience had taught him that in many cases without erosion of the cervix but with the existence of one or two Nabothian cysts either in the canal or eccentrically placed on the vaginal surface of the cervix chronic pain in the tenth and eleventh dorsal segment often existed and that on puncture of the cyst with a scalpel, which was painless and did not require an anæsthetic, the pain was removed, along with the frequent uterine congestion and menorrhagia. He was glad to hear Dr. Rabagliati's remarks concerning the rheumatic and gouty diatheses and cordially agreed with his conclusions. In this connexion he would point out the great efficacy of iodide of potassium in 15-grain doses, repeated twice or thrice. He could not agree that varicocele of the broad ligament was the cause of ovarian pain.

Dr. F. EDGE (Wolverhampton) thought that there were many cases where operation for ovarian pain did good service.

Sir A. V. MACAN (Dublin) said that he disapproved of the term "ovarian pain." Many cases were mental and impressional in nature. Many women returning from America to Ireland went about from specialist to specialist, knew all about their supposed ailments, and often demanded operation. He did not think it was possible to remove ovarian cystic disease by merely incising one cyst, for the whole ovary was microscopically cystic in many cases. He did not believe that removal of the ovaries for pain *per se* was of the slightest use or could be honestly advocated.

Dr. HERMAN in his reply stated that he had addressed the section on so-called *chronic* ovarian pain and not on acute painful conditions of the ovaries, which did not enter into the scope of the discussion. The eleventh dorsal nerve area on the abdomen was of course the area corresponding to the cervix, uterus, and Fallopian tubes; the tenth dorsal nerve area was that appertaining to the ovary and its diseases. He did not think that varix of the broad ligament was the cause of pain, and Mr. A. Pearce Gould had shown in his work on Varix that the pain was the reason for drawing attention to a long-existent varicocele, that varix often existed without pain, and that after removal of the varicocele the pain did not at any rate immediately depart, so that it appeared as if other causes were at work than the mere existence of the varix. Cystic ovaries were removed because they were cystic, and ovaries were removed in painful dysmenorrhœa and not because there was pain only.

Dr. HELLIER read an interesting account of a case in which an ovarian tumour was simulated by lymphangeioma of the great omentum, and showed the tumour removed, which was typically lymphangeiomatous.

Dr. EWEN MACLEAN read an instructive and well-thought-out paper entitled "Some Cases of Ectopic Gestation."

PSYCHOLOGICAL MEDICINE.

THURSDAY, JULY 28TH.

Dr. J. BEARD (Edinburgh) read a paper on

Heredity as Viewed from the Biological Aspect.

The phenomena of heredity, he said, were limited to the germ cells of plants and animals; they were germinal in nature. In the procession of life from generation to generation of plants and animals the phenomena of heredity were limited to the line of germ cells of each individual, the plant or animal body being regarded as a mere lateral and terminal offshoot of this line. In this sense the parent could not transmit anything to his so-called offspring. "The germ cells were the Alpha and Omega: they passed from a beginning of which we have no knowledge, to an end, which we cannot conceive." Whatever modification the parent may have acquired during its life did not concern or affect the germ cell and hence such modification could not be transmitted to the offspring which arose from the germ cell. "Acquired characters" were thus not transmitted. Dr. Beard then referred to the cutting off of the tails of adult mice which had no effect on the offspring. For though generations of mice might thus be treated, yet the young were always born with normal tails. The recapitulation theory of biologists, according to which every animal in the course of its development "climbed its own genealogical tree," was merely an illusion of the imagination without any basis in fact. The formation of the "embryo" as ordinarily understood was a mere incident in a chain of events. The process of sexual conjugation of a germ cell and a sperm cell was the "loose joining together without blending of two individualities." But neither the germ cell nor the sperm cell had itself been a higher animal and neither the one nor the other had ever been a somatic cell of an animal body. The theory of Darwin known as "natural selection" in the struggle for existence was, he contended, a complete fallacy, while Weismann's theory of germinal selection was a purely mental concept "quite without connexion with any known phenomena or epoch of development and hanging entirely in the air." As defined by Weismann this process would furnish a very great variety of gametes or conjugation cells so varied in their characters or qualities that the resemblances rather than the differences among the progeny would require explanation. Dr. Beard then proceeded to discuss the phenomena of fertilisation, and stated that in the line of development of the germ cells from the fertilised egg of one generation to the visible primary egg of the same generation in many invertebrates the intermediate cell generations were five or less, thus demonstrating a close relation of the germ cells. In vertebrates the number of intermediate divisions might be ten or less. As regarded the phenomena of variation the Darwinian theory did not attempt to explain the cause of variation but assumed its existence. The only adequate cause of variation yet suggested was Weismann's theory of amphimixis and germinal selection. But these were different from Nature's method which was slow and sure. When Nature caused variation she initiated it by altering the environment. While some one or more varieties of a species might be able to adapt themselves to the new conditions, others would fail in this, and these would be eliminated either as individuals or by germinal elimination. This explanation threw light on the Mendelian cases of intercrossing of peas, on mimicry, protective colouration, bud-variation, and the loss of organs such as the hind limb of the Greenland whale. Dr. Beard then referred to the positions occupied by Darwin and Weismann as regarded natural selection and germinal selection respectively and concluded that by his own discoveries he had "completely and decisively outflanked and rendered untenable" the positions held by Darwin and Weismann. He also referred to the inappropriateness and

indeed non-significance of the terms "parent," "ancestor," "offspring" and "reversion," and in the same way an "appeal to ancestry" (Weldon) was, he said, barred by the absence of "ancestors" to appeal to the modern biometrician who studied variation with measurements treated the environment as if it were non-existent. He attached as little weight to its influence as he did to the importance of making any distinction between somatic and genetic variations. "In his published researches he ignored the influence of the environment and 'slumped' somatic and genetic variations together." Dr. Beard concluded that a good environment was an important factor for the advancement of the race.

Dr. W. KÖNIG (Dalldorf Asylum, Berlin) read a paper entitled

The Problem of Biology from the Psychiatrical Aspect.

Three principal groups of heredity might, he said, be recognised—viz., homologous heredity, dissimilar heredity, and mixed heredity. The questions proposed for discussion were, first, Was there any clinical evidence of acquired mental abnormalities being transmitted from parents to the offspring? and secondly, To what extent in insanity did environment influence the germ cells and in what circumstances did it affect the soma? His experience, covering two decades of asylum life and experience, and his studies based on the collected histories of 3329 cases of insanity, which were considered sufficiently trustworthy and which included the various forms of mental and cerebral affections, enabled him to draw a number of important conclusions. Dr. König then proceeded to describe briefly, with illustrative instance, each class of cases and said that the following were the general conclusions reached in his inquiry. First, that adult general paralysis of the insane was an acquired disorder which was not itself propagated to the offspring, but that in all individuals of neuropathic heredity the parental germ cells might be adversely affected. In certain families there was an uncommonly high degree of predisposition to parasyphilitic sequelæ. Secondly, among chronic alcoholics there was a large percentage who showed homologous heredity, the proportion of hereditarily untainted individuals being low, while the proportion of dissimilar heredity was intermediate. Thirdly, among the adult descendants of alcoholics were numerous habitual drunkards, many instances of essential paranoia, dementia præcox, and imbecility. There was a very close relation between alcoholism and epilepsy. Fourthly, the majority of chronic inebriates had a neurotic history. While there was no transmission of the habit, or even of the craving for alcohol, clinical evidence favoured the view that the germ cells were so modified as to render the offspring particularly liable to the injurious influence of intoxicants. Fifthly, idiopathic epilepsy was associated with a serious morbid variation of the germ cells and the predisposition was duly transmitted to the offspring and fully developed in them. Sixthly, the different types of functional psychoses showed a more or less hereditary association with insanity and other nervous disorders. Hereditary modification of the germ cells was in one respect of such nature that (as in the case of essential paranoia) the morbid character would duly unfold itself in time in spite of the most favourable environment, while in other cases environmental factors were necessary to awaken the dormant predisposition. Seventhly, there was clinical evidence of acquired abnormalities being transmitted to the offspring. It was highly probable that germ cells were altered when changes of sufficient potency occurred in their environment—i.e., in the parental body.

In the discussion following the above two papers

Mr. C. R. STRATTON (London) described an interesting instance of certain gall insects exhibiting the phenomena of "alternation of generations"—viz., biorhiza aptera and teras terminalis, the forms and life-histories of which were distinctive and not to be confounded with one another. He believed that cases of insanity occurring in the human race in alternating generations constituted a phenomenon on which the cycle of changes of the above gall insects threw some light.

Dr. A. S. F. GRUNBAUM (Liverpool) thought that the investigations of Dr. Beard seemed practically to confirm the possibility of transmission of acquired characters, inasmuch as alterations in the parent, due to environment or other causes, were admitted to produce alterations in the germ cell.

Dr. F. W. EDRIDGE-GREEN (London) said that distinction should be made between acquired characters such as mutilations and instincts. An individual was able to benefit his progeny hereditarily by improving certain faculties and this was the way in which could be explained the acquired instincts of sporting dogs and the evolution of the colour sense.

Dr. W. LLOYD ANDRIEZEN (London) said that right views of heredity were necessary to enable them to influence for good the future of the race, for if disease and degeneracy were hereditarily transmissible a way might be found to mitigate the evil. Dr. Beard stated that in the progress of life the individual plant or animal was merely a lateral offshoot of a line of germ cells and as such contributed nothing for good or evil to the offspring, that modification produced in the parent by the environment did not concern or affect the germ cell. "Acquired characters" was a term used in a singularly limited sense by some biologists who ignored the whole subject of pathology. In the process of development from the germ cell of one generation to the germ cell of the next the plant or animal organism was not a mere lateral offshoot of the chain. That view ignored the most patent and striking facts of evolution and of daily life. For the germ cells within the embryo went through the processes of nutrition, growth, and multiplication for several cell generations, and during their further sojourn in the animal body until the age of puberty and adolescence—a period of 16 years or more in man—were continually subjected to influences of many kinds which affected the organism or "host" in whose tissues they lodged. The further division and the maturation of the germ cells at puberty completed the cycle of organic changes which rendered the germ or sperm cell fertile and fit to enter into conjugation and initiate another generation of offspring. It could not be doubted that the long series of changes culminating in the maturation process were fraught with consequences of the utmost importance for the offspring that was to arise from those germ and sperm cells. For during this period they had been subjected to the action of nutritive, toxic, thermal, gaseous, and other changes of the blood plasma which continually bathed and nourished them and carried away the by-products of their metabolism. This plasmic environment of the germ cells could not, of course, vary excessively without death resulting, but within the limits which enabled life to continue the action of disease, degeneration, and pathogenic agencies had full play; the growing and maturing sexual cells in the ovaries and testes were subject to noxious as well as to beneficial agencies—to changes in food-supply, warmth, oxygen, and all the normal necessaries of life as well as to inanition, pyrexia, impure gases, toxic and cytolytic substances in the blood, fevers, the toxins of defective bowel and renal elimination, alcohol, lead poisoning, food poisoning, and the thousand and one factors which assailed and affected the human constitution. All such morbid agencies acted on germ or sperm cells or on embryos in the early stages of development. Damage would thus be sustained by ova and sperms while still immature, or in the maturation stages, or after conjugation and during the pre-embryonic stage. Dr. Andriezen referred to the experiments of Féré on incubating eggs and to the researches of Morel and Legrain and others in illustration of these points. Whatever biologists, whose purview was limited to animal morphology, might conclude, the study of human pathology and the daily experience of medical men showed conclusively that the offspring could be affected with disease, diathesis, and degeneracy *vis* the acquisitions of its parents. The nexus of cause and effect had been clearly traced also in experimental lesions on animals by Charrin and Delamare of the Pasteur Institute. Amphimixis was ignored as impotent by Dr. Beard. Weismann pronounced it an effective cause of variations, while another observer, Haycraft, surveying the facts, declared that amphimixis diminished or checked variations—a curious illustration of the interpretations read into a simple body of facts by three different thinkers. Dr. Andriezen also traversed several statements of Dr. Beard as to the early appearance of the germ cells in embryos and as to the number of cell generations between egg and egg, quoting the important findings of Eigemann and recent workers. He illustrated the influence of environment of a slum by citing Ewart's experiments on pregnant doe-rabbits and concluded that many of the theories propounded by Dr. Beard were wrong.

Dr. A. T. SCHOFIELD (London) expressed his agreement with Dr. König that of all hereditary tendencies that arising from alcoholism was most subject to modification by the

environment. The public followed with keen interest their remarks in this section, and especially on heredity. To be delivered from the "dead hand" of heredity, to find a door of deliverance, was an object of eager longing to many. What was inherited was not a special alcoholic craving or a disease of distinctive type, but a morbid tendency of the brain, a fault which might by early and careful training and surroundings be overcome. A tendency to disease, such as gout, successfully resisted through three generations was stamped out in the fourth—that is to say, the fourth generation was born absolutely without any weakness or tendency to uricacidæmia and gout. In nurture and environment they had agencies of great potency which, if rightly employed, had considerable power to neutralise or thwart the evil influences and the fatalism of heredity.

Dr. C. R. DRYSDALE (London) stated that environment made up 99 per cent. of all the question of improvement of the race. Heredity was far too difficult a matter to be dealt with practically and he disagreed with the view recently advocated by Dr. Rentoul, Dr. Chapple of New Zealand, and others, that we should sterilise the epileptic, the insane, the inebriates, and confirmed paupers by some surgical operation. There was no question of the prevalence of physical degeneracy in this country when 77 per cent. of the population lived in cities and when out of 11,000 young men in Manchester who wanted to serve their country as soldiers only 2000 could satisfy the low standard of five feet three inches in height. He felt that the only way to improve the race physically was by improving the social and hygienic condition of the people.

Dr. ROBERT JONES (Claybury) thought that the truth lay between the extreme views—viz., the view of Professor Karl Pearson that even mental peculiarities and qualities are inherited as strongly as are stature and anatomical characters and the view of Dr. Beard that there was no hereditary transmission at all from parent to offspring. With a large personal experience of insanity he believed that heredity played a great part in disease and human degeneration, and this had been confirmed by the very able presentation of statistical data in Dr. König's paper. Dr. Jones related his experience in the study of slum and country children and said that there was more in heredity than could be established by the morphology and continuity of germ cells alone—which was Dr. Beard's ultimate criterion. He considered that bio-chemical and constitutional changes, which certainly existed but the presence of which was not revealed by the microscope, opened up fresh fields for investigation and research.

Mr. JAMES STEWART (Clifton) said that of the large number of cases of alcoholism and inebriety which he had under care during the last 20 years quite 50 per cent. were the issue of neurotic parentage. The parents themselves were not necessarily given to drink but exhibited some nervous defect or degeneracy. Similarly he had found inebriate parents whose children were particularly liable to nervous disorders of which epilepsy was one of the most frequent manifestations. Environment and nurture were of enormous potency in determining habits of life. Place, for instance, the child of an inebriate parent in favourable surroundings and he would probably escape the risk of becoming himself an alcoholic.

Dr. T. SEYMOUR TUKE (London) inquired whether any case was known of a general paralytic begetting a son who in later life would develop general paralysis without personal predisposing cause.

Dr. G. F. BLANDFORD (London) said that the environment was a powerful agent in determining the development of insanity. If they could rescue the young children of insane patients and have them brought up in healthy conditions far fewer would become insane than if they were permitted to live with their parents.

Dr. DAVID YELLOWLEES (Glasgow) believed that the subject of heredity was really most difficult to understand. If the germ cell in its development pursued a course altogether fatalistic, one regardless of all influence proceeding from the environment in which it developed, then moral responsibility was reduced almost to a myth and conscience to a delusion. The transmission of parental qualities in respect of bodily and mental traits could not for a moment be doubted by any physician of experience.

Dr. F. MAY DICKINSON BERRY (London) inquired whether there was any difference in the liability to insanity of children born after the father had become insane compared with children born prior to his insanity and also whether the children of a tuberculous father begotten by him before and after tuberculous infection were differently constituted as regards health of body and mind.

The PRESIDENT (Dr. C. A. MERCIER, London) remarked upon the importance and intricacy of the phenomena of heredity and briefly referred to the necessity of correct views in the matter in regard to the improvement of the race.

Dr. BEARD and Dr. KÖNIG then briefly replied to the questions asked in the course of the above discussion.

PHYSIOLOGY.

THURSDAY, JULY 28TH.

Professor E. W. WACE CARLIER (Birmingham) read a paper on

Histological Changes in Liver Cells during Activity.

A large number of adult male rats were after a period of generous feeding on a mixed diet divided into four batches and each batch was then fed for several days on four different diets—(1) mixed, (2) proteid, (3) carbohyrate, and (4) fat. After 24 hours' starvation one animal in each batch was killed and the remainder were given a full meal of the special kind to which they had been accustomed, one from each batch being then killed off hour by hour and the livers appropriately preserved for microscopic examination. In the fasting rats were minute highly refractive granules of a greenish-grey colour which had disappeared an hour after the meal and did not reappear even in 12 hours. In all were clumps of a structureless material, not glycogen, staining deeply with eosin and iron-alum hæmatoxylin, in greatest abundance, however, after a long fast. The effects of the full meal were the same whatever the diet, but least marked on a carbohydrate one. Two distinct periods of nuclear activity were recognisable after a meal, the first commencing directly and lasting until the third hour, and the second beginning four or five hours after the meal and of longer duration. During these periods the nuclei became less plump and showed changes similar to those previously described by Professor Carlier in the oxyntic cells of the newt's stomach. These changes he regarded as pointing to the formation of an enzyme. A remarkable feature was the rapid vacuolation of the cytoplasm noted one hour after the meal, disappearing one or two hours later. About the sixth hour the cells swelled up and glycogen accumulated in abundance.

Dr. K. A. GROSSMANN (Liverpool) read a paper on

Further Investigations on Accommodation.

Analysis of a case of astigmatism with excentricity of the pupil where the axis changed during accommodation showed that this changing of the axis was due to a lateral displacement of the entire lens during accommodation, as demonstrated by Dr. Grossmann last year in a case of aniridia. This excentricity and ovality of the pupil had led him to investigate the accommodation changes in eyes with slit-shaped pupils. The eyes of cats under the influence of eserine and atropine were frozen by solid carbon dioxide and the shape of the lens was observed in section. Under the influence of eserine the lens showed a very marked posterior lenticonus with its apex above the optical axis. Thereby a very strong accommodation, together with vertical astigmatism, was brought about. The longitudinal axis of the slit-shaped pupils coincided with the axis of the (myopic) astigmatism and so neutralised it. Here for the first time was given an explanation of the shape of the pupil in the cat. Dr. Grossmann had also been able to show this vertical astigmatism by performing iridectomy on cats and examining the eye ophthalmoscopically. He had been able to disprove the assertion of Hess that the range of accommodation in the cat was practically *nil;* it was, on the contrary, considerable. Finally, he argued that the iris was more important as an optical (stenopæic) diaphragm than as a light screen. A large number of slides illustrated this paper.

Dr. GROSSMANN read a second paper on

The Purkinje-Sanson Reflex Image of the Anterior Lens Surface.

In observing Purkinje-Sanson reflections from the anterior surface of the lens an angle of incidence of 60° was better than one of 30° as used by Helmholtz. It was easy by this means to obtain reflex images from the circumpolar and peripheral parts of the anterior lens surface but it was in the overwhelming majority of cases impossible to get any reflection from the centre. The centre of the lens was, in

fact, not spherical either in young or old, atropinised or normal eyes. By careful observation the reflex image was seen to be interrupted by black lines which formed the figure of a six- or seven-rayed star corresponding to the architecture of the lens. The reflection took place, therefore, at some surface lying deeper than the lens capsule, since the latter did not take part in the radiate arrangement of the lens fibres. Observations on a case of polar cataract showed that the reflecting surface dipped inwards towards the centre of the lens at the margin of the small cataractous opacity, although the anterior surface of the lens capsule was of quite normal shape.

Professor J. A. MACWILLIAM (Aberdeen) read a paper on

Some Points in the Physiology of the Mammalian Heart.

The spontaneous rhythmic beat of the heart might be observed to originate not only in the terminal parts of the vena cava but also in the coronary veins. Vagus excitation even when strong did not diminish the direct excitability of the ventricle; its effects were purely upon the force of the contraction. Contrary to general belief the rhythm of the heart, the connexion of which with the central nervous system had been severed, was remarkably insensitive to changes of blood pressure within wide limits, although the contractile force was very readily affected. There was no trustworthy experimental evidence that the cardiac augmentor nerves could be excited reflexly or by cerebral anæmia or asphyxia. The peripheral efficacy of the vagus was not markedly affected by asphyxial blood or within wide limits by changes of arterial and venous pressure. After asphxyia had reached a certain stage readmission of air into the lungs was followed by an excessively rapid heart-beat.

Dr. HUGH MACLEAN (Aberarder) communicated a paper on

The Action of Muscarin and Pilocarpin upon the Heart.

The paper, which was read by Professor MACWILLIAM, showed that in the heart of the frog, the newt, and the eel the "survival time" and the efficacy of the inhibitory mechanism underwent marked seasonal variations. Muscarin and pilocarpin were more or less effective in exact correspondence with the varying efficacy of the inhibitory mechanism as tested by direct electrical excitation. This parallelism was equally marked in different isolated portions of the heart and showed that the two drugs investigated acted on the inhibitory mechanism and not directly on the cardiac muscle. Since the apical portion of the newt's heart could be inhibited by muscarin and pilocarpin and the inhibition was done away with by atropin, and yet this part was free from ganglion cells, these drugs must act upon the terminal portion of the inhibitory mechanism.

Professor CARLIER read a paper on

The Elastic Tissue of the Eyeball.

More elastic tissue was found in the eyes of birds than of any other class of vertebrates and especially in birds that accommodated strongly to pick up small objects. The eyes of other members of the sauropsida, such as lizards, did not possess elastic tissue at all. The so-called elastic fibres which fartufieri and others had described in the cornea and in Descemet's membrane did not stain with Weigert's stain unless this was reinforced by orcein, and they were not composed of elastin but of a chemically allied substance.

A joint meeting of the Section of Anatomy and Physiology was held under the chairmanship of Professor ARTHUR THOMSON (Dublin) and later of Professor F. GOTCH (Oxford) to discuss

The Thalamic Region.

The subject was introduced by Dr. GUSTAV MANN whose remarks are reported under the proceedings of the Section of Anatomy. Among the points of special physiological interest may be noted Dr. Mann's observation that removal of the olfactory lobe in young rabbits was invariably fatal, owing to loss of the sense of smell. Dr. Mann divided the thalamus into a dorsal and a ventral portion, the fillet fibres terminating in the anterior part of the latter. The dorsal portion, with the exception of the tænia thalami, ganglion habenulæ, and fasciculus retroflexus, served to connect the thalamus with the cerebrum. The effects of removal of the cerebrum, middle ear, and eyes were explained with the help of 60 diagrams representing the nuclei of the thalamus of the rabbit.

Dr. W. PAGE MAY (London) described the effects of one-sided lesions of the thalamus performed for him by Sir Victor Horsley. The most notable symptoms were paralysis and anæsthesia of the opposite side of the body, hæmianopia, and turning of the face to the side of lesion with the opposite ear depressed to the opposite shoulder. In some cases the opposite pupil became larger than that of the same side.

FRIDAY, JULY 29TH.

Sir VICTOR HORSLEY in introducing the discussion on

Chloroform Anæsthesia

pointed out that the appointment of the special chloroform committee of the British Medical Association was the result of Dr. Waller's suggestion that death during chloroform anæsthesia was due to overdose. The committee was instructed to determine quantitatively the percentage of chloroform in the air breathed and in the blood. In its labours it had been so fortunate as to secure the help of Mr. Vernon Harcourt who had devised a simple apparatus by which it was possible to regulate the percentage of chloroform vapour in the air breathed. This apparatus was, in the opinion of the committee, by far the most suitable yet devised and if shaking was avoided it delivered air containing at most 2 per cent. by volume of chloroform vapour. Error due to changes of temperature in the chloroform was avoided by the introduction of coloured beads of different specific gravity which served as indicators of such change. It was as necessary to know the dose of chloroform given as of any other drug, and Harcourt's apparatus enabled them to do so. In children a percentage of 1·5 was often sufficient to induce anæsthesia. After some 20 minutes the percentage required to keep up the anæsthesia fell enormously and might sink to nothing during as long as 20 minutes. Du Bois's apparatus weighed a quarter of a hundredweight and had the disadvantages inseparable from any type of "blow-through" apparatus.

Professor B. MOORE (Liverpool) described experiments conducted in association with Dr. H. E. Roaf showing that chloroform formed easily dissociable compounds or aggregates with the proteids of the blood and tissues and argued that the production of anæsthesia was due to this fact. The aggregations only existed so long as an adequate pressure or concentration of the anæsthetic was kept up in the surrounding medium. Their existence was shown (1) by the greater solubility of chloroform in serum or solutions of hæmoglobin than in salt solution—e.g., serum dissolved five times as much as water or normal saline solution; and (2) by the fact that at equal concentrations the pressure of the anæsthetic (measured by the differential densimeter, an instrument specially designed for this purpose) was much lower in serum or blood than in water or saline solution. With increasing concentration of chloroform in the air breathed the amount of chloroform in the blood was found to increase at a proportionately greater rate. From experiments upon cardiac tissue and cerebral tissue he had come to the conclusion that chloroform produced its effects by acting upon protoplasm and not upon such substances as lecithin or fat and that these effects were proportional to the concentration or osmotic pressure of the anæsthetic at any given time.

Mr. E. S. EDIE had, in conjunction with Professor Moore, investigated the precipitates produced by chloroform in solutions of hæmoglobin and serum. One and a half per cent. of chloroform produced a precipitate in the former when kept at blood temperatures. With higher percentages the solution first became brick red and then opaque. The precipitate could be washed with water and was practically insoluble in it. When exposed to a low pressure this washed precipitate gave off considerable quantities of gas, presumably chloroform. It was readily soluble in sodium hydrate and sodium carbonate solutions. When the percentage of chloroform was insufficient to cause a precipitate in hæmoglobin solutions the compound was salted out by saturation with ammonium sulphate. Determination of the chlorine in the salted out and precipitated compounds showed that this was approximately constant. With carbon-monoxide hæmoglobin much more chloroform was necessary to cause precipitation.

Professor C. S. SHERRINGTON (Liverpool) stated that his experiments on the effects of perfusing blood containing chloroform through the isolated mammalian heart showed that with heavy doses a permanent damage was inflicted which could not be removed by any amount of perfusion with saline solutions free from chloroform. With lighter doses the cardiac beat was depressed and the amount of the depression was graded by the tension of the chloroform in the liquid

perfused. The effect of chloroform when the perfusing liquid was blood was enormously smaller than when the liquid used was normal saline solution, in fact, for equal effects it was necessary to use ten times as much chloroform in blood. The animal principally used was the cat. He had never observed changes in the rhythm of the isolated heart as the result of chloroform.

Professor S. H. C. MARTIN (London) called attention to Embley's experiment in which chloroform-air mixture in known percentages was supplied through the lungs to an isolated heart and lungs. With 0·8 per cent. of chloroform vapour the heart became motionless in 16 minutes, with 1·2 per cent. in nine minutes. In an intact animal it would take five or six hours to produce the same effect, a fact which the speaker attributed to the increased quantity of blood and tissues absorbing the chloroform and keeping its tension low.

Professor MACWILLIAM stated that in relatively slow poisoning by chloroform when a considerable amount had been given there was depression of the respiratory centre, arterial tone, and of the heart, but the state of the heart was the most serious bar to recovery. In sudden death at comparatively early stages of anæsthesia vagus inhibition might, he pointed out, be largely responsible, the blood flowing slowly through the lungs becoming over-charged with chloroform and producing fatal damage when distributed through the coronary arteries to the heart. It was very important to aim at obtaining steady intake and distribution of the anæsthetic. Given a definite percentage in the air the amount reaching the heart per unit of time might vary (1) from variations in the amount of air breathed, and (2) from variations in the blood current through the lungs; and these variations were especially apt to occur during imperfect anæsthesia. It was often impossible to determine post mortem whether death had occurred from asphyxia or from syncope, since post-mortem rigor in the heart might cause a heart paralysed by chloroform to show the features commonly associated with death from asphyxia.

Dr. DUDLEY W. BUXTON (London) stated that although it was once taught that dangers due to reflex cardiac inhibition could be abrogated by giving a larger percentage of chloroform vapour in the air breather, Embley's work had shown that reflex inhibition might be fatal when high percentages were used. The supposed dangers of low percentages were due to the fact that complete anæsthesia had not been attained before operative measures had been commenced. In his experience 2 per cent. of chloroform was adequate in most if not in all cases and when a higher percentage than this was used it should only be with special reasons and with a full recognition of the danger of the proceeding.

Professor WALLER criticised the apparatus devised by Vernon Harcourt on the ground that it established a vicious circle in which, as had been admitted, a rising percentage of chloroform vapour accompanied falling respiration and also that perfect tranquillity of the chloroform surface, although an absolute necessity, had not been secured. The clinical report on the utility of the apparatus had not been either complete or impartial. He thought that the method used by the Chloroform Committee of the British Medical Association for estimating the chloroform of blood was, however ingenious, very laborious and necessarily inexact.

Dr. W. J. MCCARDIE (Birmingham) had, using Harcourt's apparatus, anæsthetised ten adults with 1 per cent. of chloroform vapour in the air and had found the average period before the lid reflex was much dulled or abolished to be 16½ minutes; with 1·5 per cent. in ten cases it was 12½ minutes. He had found that, beginning with ethyl chloride followed by ether for five minutes, he could maintain anæsthesia with just about 1 per cent. of chloroform and thought this a very advantageous method. He recommended that induction of anæsthesia should be begun with 1 per cent. to 1½ per cent. of chloroform, but for alcoholic patients the Harcourt apparatus should be modified so that larger percentages could be given. The great principles of graduation of dosage during induction and fixation and regulation of dosage during continuance of anæsthesia could be perfectly carried out by Harcourt's apparatus and the danger of overdosage be largely done away with. The main features of the anæsthesia obtained by its means were: (1) the quiet and regular induction with absence of mental and muscular excitement; (2) the comparative lightness and yet efficiency of the anæsthesia; (3) the perfect control; and (4) the quick recovery and small after-effect.

Dr. PAUL M. CHAPMAN (Hereford) exhibited and described Du Bois's apparatus for administering chloroform. This apparatus furnished a constant flow of air containing chloroform vapour in known percentages independently of any suction efforts on the part of the patient. It was easy to obtain within minute limits faithful percentages of 1·2, 1·6, or 2·0, the latter being just sufficient to produce complete surgical anæsthesia without reflex movements. The apparatus was worked by turning a handle about six times a minute, each revolution delivering four litres of the chloroform-air mixture. It was impossible to exceed 2 per cent. of chloroform unless the apparatus was shaken. The average time occupied in producing complete anæsthesia was eight minutes and he had found administration of chloroform by this instrument most trustworthy and relatively free from danger.

Dr. H. C. CROUCH (London) had avoided fallacies due to shaking of the Harcourt apparatus and had found that on the average it took 20 minutes to induce anæsthesia. When, however, the breathing was shallow the patient went under quickly and there was grave danger of an overdose. He held strongly that the apparatus was ineffective and depended largely on the accidental element of shaking.

Dr. A. G. LEVY (London) stated that he had estimated by Harcourt's combustion method the percentage of chloroform vapour in air sucked through a Harcourt's inhaler in the same quantities as those occurring clinically. With varying rates of air-flow he found, with the index at 2 per cent., amounts varying from 2·02 to 1·38 per cent. Even a slight shake raised the percentage to 2·73, while a stronger one raised it to 5. Having illustrated practically that it was possible to shake the bottle Dr. Levy stated that Harcourt's apparatus did not fulfil the essential requirements of a chloroform inhaler—viz., "that it should tell us to a nicety what strength of vapour the patient was breathing."

Sir VICTOR HORSLEY replied to the various criticisms to which Harcourt's inhaler had been subjected.

ANATOMY.

THURSDAY, JULY 28TH.

Dr. R. J. A. BERRY (Edinburgh) and Dr. H. D. SHEPHERD (Edinburgh) gave a demonstration on

Cranio-cerebral Topography,

illustrated by lantern slides and five casts. They had recently been engaged in an investigation of the methods associated with the names of Hare and Thane, Chiene and Reid. In each instance the brain had been thoroughly hardened by means of formol injections on the undissected subject and the guiding lines employed by each of the three methods under investigation were then drawn on the skull, all intermediate portions of the bones being afterwards removed by Hey's saw. The result was a clear demonstration of the positions of the various fissures and convolutions of the brain and their relations to the osseous bars which indicate the guiding lines of the method employed. The conclusions which had been arrived at were that Hare and Thane's method gave the fissures of Rolando and Sylvius fairly accurately, whereas Chiene's method only marked out the Rolandic area correctly in 43 per cent., and, moreover, that Reid's method was altogether inaccurate for marking out the fissure of Sylvius. Hare and Thane's method was therefore to be regarded as the most accurate of all those methods which they had submitted to investigation and the most generally applicable of all methods of cranio-cerebral topography.

Professor JOHNSON SYMINGTON (Belfast) inquired whether the material which had been worked with was perfectly fresh or whether there were any shrinking and accumulation of fluid due to old age.

Professor A. THOMSON (Oxford) and Professor G. D. THANE (London) also spoke and, in reply, Dr. BERRY stated that the greatest care had been taken, and though the method was excessively laborious it gave the utmost precision obtainable and constituted a severe proof of the accuracy or otherwise of the particular method investigated.

Mr. J. W. JENKINSON (Oxford) followed and demonstrated by means of the lantern and the microscope

The Arrangement of the Maternal and Fœtal Glycogenic Cells in the Placenta of the Mouse.

He stated that glycogen was found first of all in the

maternal cells which overlay the allantoidean portion of the trophoblast and that these cells reached their highest phase of development in about 12 days or at the time when the allantoic villi began to penetrate the trophoblast. They were rounded and separated from one another by elongated, fusiform, or stellate supporting cells and each contained a rounded nucleus with one nucleolus. At this time mitoses were no longer to be found in the cells. In the next stage the uterus had by the growth of the embryo increased considerably in size, but the cells of the maternal glycogenic tissue had ceased to multiply, were incapable of keeping pace with this increase of volume, and were necessarily separated from one another. They then began to disintegrate and eventually degenerated and disappeared. Meanwhile another glycogenic tissue of trophoblastic—i.e., fœtal—origin had begun to make its appearance. The trophoblast of the placenta was divisible into two portions: (*a*) an allantoic portion on the fœtal side penetrated by the capillaries of the allantois, and (*b*) a glycogenic portion between the allantoic trophoblast on the one side and the maternal glycogenic layer on the other, traversed by maternal blood but not invaded by the fœtal vessels. The cells of this layer secreted glycogen; they were closely packed, oblong in shape, and their nuclei were oval and contained more than one nucleolus. In the subsequent stages of placentation the glycogenic trophoblast encroached more and more on to, and occupied the space previously filled by, the maternal glycogenic cells, ultimately reaching the muscularis. Soon the maternal glycogenic cells showed diminution in numbers and eventually completely disappeared. Towards the end of gestation the glycogen disappeared from the glycogenic trophoblast also, the cells of which collapsed. Mr. Jenkinson thought that this might possibly play some part in determining the moment of parturition as it was across the zone of trophoblastic glycogen cells that the placenta broke away from the uterus.

Professor A. H. YOUNG (Manchester) and Professor ARTHUR ROBINSON (London) communicated some observations on

The Development and Morphology of the Tail.

So far as its functions were concerned the tail of vertebrated animals was admittedly an appendix, but, on the other hand, so far as its development and its general structure were concerned, it had been regarded as morphologically identical with the body itself. If, moreover, the structural elements of the body and the tail were morphologically equivalent the tail, like the body, must be segmental, the segments of the two parts should be of similar value, and their constituent elements should play relatively similar parts in the general economy. The constitution of a typical segment was then described and this was contrasted with a tail segment, and it was shown that the tail of any adult tailed mammal possessed many of the factors that were to be regarded as characteristic of a typical segment, but not the whole of them, for some essential parts were suppressed. For example, the visceral tube was absent and the spinal cord was limited in extent. The ontogeny of the tail helped to confirm and to emphasise the adult anatomy, for it demonstrated clearly that the tail possessed some and was devoid of other important constituent parts of somatic structure. At all periods it was devoid of excretory system and cœlomic space. It possessed blood-vessels and so far as the artery was concerned it simulated, but it was not simply a continuation of, the dorsal aorta of the body somites. Its spinal and sympathetic ganglia were few and it was doubtful if they belonged in reality to the tail somites proper or were merely displaced ganglia from the somatic region. The nerves were derived from the "caudal ganglia," from the posterior somatic ganglia, and the somatic neuromeres of the spinal cord. The muscles were derived from muscle plates which greatly exceeded in number the caudal ganglia and the ventral roots which came from the caudal segments of the spinal cord. The fact that the muscle plates considerably exceeded in number the caudal ganglia and the ventral roots was one of the most striking features of the anatomy of the tail, for it proved that the rule of the muscle deriving its nerve-supply from the same segment was no longer applicable to every part of the body, for in the tail it was certain that many of the muscles were supplied by nerves of more anteriorly placed segments. Amongst the conclusions at which Professor Young and Professor Robinson had arrived as a result of their investigations were that the tail was not merely a backward prolongation of the body, consisting of the same dorsal and ventral parts, but that it was the result of the energy of a growing point which contributed to the formation of the body as well as the formation of the tail. In its widest sense the tail was an appendage to the body and its nervous and vascular supply were dependent on the nerves and vessels of the body which had been prolonged into it.

The rest of the morning was occupied by an important discussion which took place, jointly with the Physiological Section, on

The Thalamic Region.

Dr. GUSTAV MANN (Oxford), who opened the discussion, first drew attention to a fundamental division of the nervous system into two parts, a part in front of and a part behind the posterior commissure of the brain. The part anterior to the commissure he called the thalamus and the part behind, which included the medulla, the pons, and the mesencephalon, he called the cord. At first the two parts were functionally as well as anatomically distinct, for the cord had from the commencement a sensory and motor mechanism, whereas the thalamus was primarily sensory and later the motor mechanism became superadded by means of the cortex and the corpus striatum. The thalamus through the olfactory and optic outgrowths became connected with the olfactory and visual cells and through the red nucleus it became connected with the cord. Dr. Mann regarded the retina, with the exception of the layer of rods and cones, as part of the thalamus and described how the thalamus became further joined to the cord through the sense of touch by means of the fillet. After having thus detailed the various stages in the development of the thalamus he showed an extensive series of drawings of the various thalamic nuclei and agreed with the primary division of the thalamus into dorsal and ventral parts by the falciform nucleus of Ramon y Cajal. The oldest nucleus of the thalamus was the ganglion habenulæ, a nucleus developed in the tænia thalami and persisting after removal of the cerebrum.

Sir VICTOR HORSLEY (London) followed and agreed with the morphological conclusions of Dr. Mann and particularly as to the division of the thalamus into dorsal and ventral portions, according to the original view of Burdach, and he also agreed that the ventral division of the external geniculate nucleus had different pallial relations from the dorsal division. Further, he discussed the minute structure of the ventral division of the thalamus and showed that the extremely restricted termination of the fillet axones as localised by the degeneration method was now confirmed in the most recent publication by Ramon y Cajal. Both methods tended to show that the "fillet nucleus" consisted of three parts, a central globular portion to the opposite sides of which two semilunar nuclei were applied. Further, he asked—What was the morphological unit wherewith to divide the thalamus? He thought that the plexuses of fibres should not be dwelt upon for subdivision of the thalamus but that the true morphological limit was the cell. What neurologists wanted for the analysis of function was the most minute description of the nuclear collections of cells.

Professor F. GOTCH (Oxford) thought that the most important side of the thalamus was afferent and that the efferent was superadded.

Dr. W. B. WARRINGTON (Liverpool) drew attention to Probst's works on the subject of the thalamus. For himself he regarded the thalamus as a great relay centre, receiving the terminations of nerve fibres from the pallium, cerebellum, &c.

Dr. W. PAGE MAY (London), who had been working at the subject in monkeys, gave a most interesting account of the results of lesions in the thalamus and detailed the symptoms produced. He had found in a large number of cases hemianæsthesia and hemianopsia of the opposite side of the body, as was found in the classical case in man described by Dr. Hughlings Jackson in 1874. In addition he found in about half the cases a most interesting symptom which consisted in a deviation of the face and head to the same side as the lesion whilst the opposite ear was drawn down to the shoulder. In 15 out of the 16 monkeys on which he had experimented he found paralysis on the opposite side due to implication of the fibres of the pyramidal tract. In 11 there was anæsthesia on the opposite side; in several cases the contralateral pupil was larger than the pupil on the same side as the lesion, and nystagmus was occasionally present.

Sir VICTOR HORSLEY and Dr. MANN replied briefly.

FRIDAY, JULY 29TH.

The meeting of the section on Friday was held in conjunction with the Anatomical Society of Great Britain and Ireland. Professor JOHNSON SYMINGTON (Belfast) was in the chair and a large number of members and visitors were present.

Professor EDWARD FAWCETT (Bristol) read a preliminary communication on

The Ossification of the Lower Jaw in Man.

He first discussed the ossification of that part of the mandible from the region of the mental foramen to the middle line. As was well known Meckel's cartilage itself was directly converted into bone in this situation, but what he desired to emphasise was that Meckel's cartilage was not the only factor in the formation of the "symphysial" portion of the lower jaw but that it was covered in this position by a membranous structure which also became converted into bone and that this ossification was continuous with the so-called dentary centre. Towards the end of the second month a cartilaginous mass appeared in the condyle and extending down through the neck and root of the coronoid process reached the level of the lower end of the anterior border of that process. He doubted if any separate "splenial" centre was ever developed and also if any "angular" mass of cartilage appeared and became secondarily ossified. The appearances of the specimens which he had examined suggested that probably the whole membranous part of the jaw developed from one centre, but his specimens were not young enough to enable him to speak definitely on this point.

Dr. A. KEITH (London) asked whether the cartilage of the condyle and coronoid processes were formed independently of Meckel's cartilage, and Professor ROBINSON whether the Meckelian centre was independent of that in the surrounding membrane or not.

Dr. A. LOW (Aberdeen) confirmed Professor Fawcett's observation that the "dentary" centre appeared in membrane and extended forwards as a plate of bone right up to the middle line in front. From the dentary plate a shelf grew upwards and inwards for the support of the tooth germs, while Meckel's cartilage lay below the plate. Dr. Low, however, had observed that distinct cartilaginous masses appeared in the condyle, the coronoid process, and the angle, and these in turn underwent ossification. In certain mammals these cartilaginous nuclei were much more definite than in man and clearly had no connexion whatever with Meckel's cartilage.

Professor FAWCETT said, in reply, that the cartilage of the condyle and coronoid processes were developed long after the Meckelian cartilage and that the centre of ossification which appeared in the latter in the neighbourhood of the symphysis was independent of that in the surrounding membrane.

Dr. H. W. MARETT TIMS (London) gave a demonstration on

The Significance of Certain Epithelial Masses in Connexion with Developing Teeth,

illustrated with lantern slides. He pointed out that when the jaws of fœtal mammals of various stages were examined certain spherical epithelial masses, lying to the labial side of developing teeth and connected with the neck of the enamel organ, could be observed. Such spherical masses had already been seen in connexion with the fourth premolar of the dog and gymnura and with the so-called molars of the guinea-pig. They were also to be seen to the labial side of the first incisor, the second incisor, and the canine teeth in the human fœtus of three months. In these examples the masses were composed of distinct epithelial cells forming a spherical mass, with a neck, at first widely open and directly continuous with the cells of the dental groove. In a four and a half months' fœtus these bodies were still to be seen lying close to the edge of the jaw, but the cells had become more elongated, concentrically arranged, and distinctly granular. From the constancy of their position in relation to a developing tooth, from their temporary existence, and from their spherical shape they had, Dr. Marett Tims thought, some morphological significance. The only suggestion which occurred to him was that they represented vestiges of a previous dentition. If this were so then the human fœtus showed better marked vestiges of a pre-milk dentition than any other animal with which he was acquainted.

Professor D. J. CUNNINGHAM (Edinburgh) gave a lantern demonstration on

The Varying Form of the Stomach in Man and Anthropoids.

The first part of the paper confirmed and to some extent supplemented the observations of Professor His as detailed in his paper published last year in the *Archiv für Anatomie*. The second part of the paper dealt with certain physiological conditions of the stomach which were now frequently seen in formalin-hardened subjects. The condition especially dealt with was one in which the stomach presented a capacious cardiac part and a long, narrow, tube-like pyloric part. Professor Cunningham showed that this was not a gastric state which could be explained by tight lacing as was inferred by Professor His. He exhibited slides in which it was evident in two males, a female, and also in the stomach of a full time fœtus, and he referred to Mr. Cannon's observations on the movements of the stomach of the cat as observed by means of the x rays. In the third part of the paper the question of hour-glass stomach was discussed and Professor Cunningham supported the views of Mr. B. G. A. Moynihan. He held that this form of stomach might be due to physiological and to pathological causes, but it had yet to be shown that it ever was a congenital condition. The slide of a stomach of a full-time fœtus divided by a physiological constriction into a cardiac expanded part and a tube-like pyloric part was shown.

Dr. A. KEITH (London) drew attention to the fact that formalin seemed to pick out certain parts of the viscera which during life were in a systolic condition, so that by this means a somewhat similar condition was reproduced after death. In this way he explained certain constrictions which were to be seen along the alimentary canal in formalin-hardened bodies.

Dr. W. WRIGHT (Birmingham) thought that formalin did not afford a satisfactory explanation of constrictions. He had seen them during life and in two cases after death.

Professor A. ROBINSON (London) argued that the constrictions were irregularly arranged and not definite in position. They also varied in different individuals.

Professor J. SYMINGTON (Belfast) believed that with formalin the constrictions were more fixed than formerly when chromic salts were used. He supported Professor Dixon on the rarity of the empty diastolic condition.

In reply, Professor CUNNINGHAM thought that the action of formalin was purely a fixative one.

Professor F. KEIBEL (Freiburg) showed a series of models illustrating

The Development of the Uro-genital System, the Liver, the Pancreas, and the Spleen of Echidna.

Some of his more important results were as follows. 1. The mesonephros was very highly developed. It possessed large numbers of well-developed nephrostomes and it was probable that it was associated in function with the kidneys for some time after the animal was hatched. 2. The rudiments of the cortex of the suprarenal bodies appeared very early, arising from the cœlomic epithelium. The medullary portion of the suprarenals was derived from the sympathetic system and united with the cortex at a very late period in the development of the animal. 3. The ureter, the pelvis, and the tubuli recti arose from the Wolffian duct, whereas the glomeruli and the remainder of the uriniferous tubules were derived from the renal blastema. 4. There were two ventral and one dorsal pancreatic rudiments and all three produced pancreatic tissue. 5. The spleen of the echidna was derived, as in all other mammals, from the mesoderm of the dorsal mesogastrium. It had nothing to do with the entoderm and the pancreas rudiment.

Dr. J. D. LICKLEY (Manchester) read an interesting paper on

The Morphology of the Intertransverse Muscles,

and showed the relations of these muscles to the intercostals and the interarticulares.

Dr. J. CAMERON (St. Andrews) submitted a contribution on

The Ontogeny of the Neuron in Vertebrates,

and illustrated his remarks by lantern slides. His observations showed that the neuroblasts were really nuclei possessing no cytoplasmic envelope whatever. The rudiments of the axis cylinders arose in the form of protrusions from these nuclei. The results therefore gave support to the theories of His and Kölliker, and were, on the other hand, at variance with the theory of Hensen regarding the origin of nerve fibres. In reply to certain questions Dr. Cameron gave an account of his fixatives and the technique generally.

Dr. ALEXANDER LOW (Aberdeen) described some

Skeletons obtained from Short Cists found in the North-east of Scotland.

He said that the mode of burial and the pottery found along

with the skeletons had characters usually assigned to the bronze age but the skeletons themselves exhibited certain characters differing from those usually ascribed to bronze-age skeletons in Britain. The skulls were very broad, and six out of ten which he examined were hyper-brachycephalic. The face showed no trace of prognathism, the mean gnathic index being distinctly less than that of the average modern Scottish skull. The lumbar vertebræ of one skull exhibited characteristics of the lumbar spine in the dark races. As regards stature, Dr. Low estimated that in six males the average height was five feet three inches, whilst one female must have been just under five feet. After contrasting the skeletons with the ordinary type of bronze-age skeleton Dr. Low referred to the affinities of the short-cist people. He thought they must be descended from the short broad-head Alpine race that occupied central Europe in late neolithic times. It was, however, difficult to see how they came to the north-east of Scotland.

Dr. WRIGHT said that the skulls were of the type named by Sergi *sphenoides tetragonus*, and although the race in the north-east of Scotland was almost a pure brachycephalic one, in cists in Yorkshire of the same period long-skulled populations had been found buried with round-headed ones.

Dr. OTTO GROSSER (Vienna) read a paper on

The Metameric Structure of the Skin in Vertebrates.

After referring to the work of Sherrington and Head he proceeded to contrast the stripes and lines on the fur of certain mammals with the innervation of the skin. The latter part of his paper dealt with the segmental distribution of the arteries of the skin in man, and his researches had confirmed those of Manchot that the distribution of the arteries to the skin was, unlike the nerves, subject to considerable irregularity. Frequently arteries of certain segments were missing and replaced by branches from neighbouring segments.

PATHOLOGY.

FRIDAY, JULY 29TH.

Professor VON NOORDEN (Frankfort-on-the-Main) introduced a discussion on Gout in a paper entitled

The Chemical Pathology of Gout.

After a comprehensive review of all the ascertained and established facts relating to the metabolic processes in gout he summarised them by stating that the oxidising energy of metabolism was not altered; the metabolism of albumin exhibited greater variations than in the healthy, and an increase in the elimination of nitrogen and phosphoric acid appeared during the attacks as well as in the intervals which pointed to the coöperation of endogenous toxic substances the nature of which was unknown. The influence of gout on the functions of the stomach and intestines was discussed and it was pointed out that the irregular results of this influence possessed no specific significance; the excess of nitrogen in the fæces was probably the result of increased nitrogen secretion into the intestinal canal. Endogenous (from the nuclein of the body), exogenous (from the nuclein of the food), and synthetical formation of uric acid took place; the other purin substances were stated to be, in comparison with uric acid, of minor importance. While endogenous uric acid formation did not show any material alteration in quantity from that observed in health, many minor yet important characteristics were observed with regard to exogenous uric acid, particularly in the direction of spontaneous fluctuations in the intervals between the paroxysms. In gouty patients, too, the rise of uric acid after the ingestion of purin substances appeared to be much more delayed than in the healthy. This and other observations pointed to the conclusion that retention of uric acid occasioned gout and was followed by a rise in the uric acid of the urine. Normally only traces of uric acid appeared in the blood, but increase followed overfeeding healthy individuals with purin bodies, although no gouty deposits could be produced. Gouty deposits in the tissues consisted of sodium biurate and it was suggested that acute gouty inflammation depended on the sudden solution of the crystalline deposit, the solution being effected by phagocytic action, not by alterations in the alkalinity of the blood. The theory was put forward that the normal organism elaborated certain organic substances with haptophoric side chains which combined with, and dissolved, uric acid, so removing it from its source of origin by means of the blood and presenting it to the kidneys in a form easily eliminated, whilst the gouty individual manufactured these organic substances in too small quantities. In conclusion, the various therapeutic measures at the disposal of the physician and the indications for their exhibition were briefly discussed.

Dr. A. E. GARROD (London) was then called upon to read his paper, bearing a similar title to that of Professor von Noorden. He pointed out that the chief known data bearing on the pathology of gout centred round uric acid and its compounds but that the failure to explain the disease by a study of uric acid had led this substance to be regarded as playing a secondary part in the pathology of gout and its excess in the blood and deposition in the tissues as mere epi-phenomena of the disease, and he contrasted this view with the theory that uric acid even when held in solution in the body fluids exerted toxic properties and played a conspicuous part in the causation of gout. He regarded the presence of excess of uric acid in the blood as an established fact. This excess might possibly be due to over-production the result of tissue metabolism or of excessive ingestion of nucleins or purin substances into the alimentary canal. Over-production should, given normal kidneys, result in increased excretion, but such had never, except during the later stages of an acute case, been demonstrated in gouty individuals. Another explanation of the excess would be diminished destruction of uric acid in the organism, while the theory that the excess was due to the synthetic production of uric acid by the kidneys themselves required the assumption of a backward secretion from the kidneys to the blood for its acceptance. Dr. Garrod regarded with most favour the view that the excess in the blood was due to deficient excretion of uric acid by the kidneys, for it did not necessarily follow that an accumulation due to defective excretion involved a daily output below the normal level, and he pointed out that the consequent retention might either be due to defect of the kidneys which would at once remove gout from the category of metabolic disorders, or to something unusual in the form or combination in which uric acid was presented to the kidneys for excretion. Inborn metabolic instability and heredity and other factors bearing on gout were briefly discussed and Dr. Garrod referred to the result of the microscopical examination of the kidneys of all cases in which uratic deposits were present in the toe-joints appearing in the post-mortem room at St. Bartholomew's Hospital during one year, which showed that more or less interstitial change was present in all; on the other hand, many patients with chronic interstitial nephritis had no deposit in their toe-joints. A promising line for investigation was suggested in regard to the combination in which uric acid existed in the blood of the gouty and the organic compounds of uric acid with, for instance, nucleic acid were mentioned, and it was emphasised that it was as crystalline sodium biurate that uric acid was deposited in the tissues. The suggestion was also thrown out that the articular lesions and uric acid deposits were largely determined by local conditions, such as previous injury.

Dr. W. RINGROSE GORE (Llandrindod Wells) then read a communication on

The Pathology of Gout,

in which he stated that he considered the position of uric acid in gout as a minor one, for among other points the actual amount of uric acid in the blood in gout was in many cases small, in some it was absent, and in very few (if any) reached the amount often present in leukæmia. He considered that the symptoms of gout were undoubtedly toxic in character and due to a toxin circulating in the blood. Digressing to trace briefly the changes taking place in the articular affections of gout he discussed the source of the toxin responsible for the disease and dismissing the possibility of the production of toxin by bacteria actually in the tissues, elaborated the theory that the disease was due to the absorption of toxins produced within the digestive canal by some, at present unknown, specific bacillus which was a normal inhabitant of the intestinal canal; that individuals who possessed what was termed "unstable intestinal secretion," either hereditary or acquired, were prone to gout; and that each attack left an increased tendency to intestinal change which might in aggravated cases become permanent.

Dr. W. J. SMITH JEROME (Oxford) read a brief communication on the subject of

Spontaneous Precipitation of Uric Acid in the Urine,

in which he described comparative experiments upon a gouty

individual and a healthy one which showed that uric acid precipitation was controlled by the food-supply. He then considered briefly the nature of the process concerned in precipitation, and after discussing the solvent powers of solutions of dibasic and monobasic phosphate salts respectively upon uric acid summarised the factors concerned in precipitation as (1) the proportion of acid to the base; (2) the percentage of uric acid; (3) the ratio of uric acid to dibasic phosphate; and (4) the ratio of monobasic to dibasic phosphate.

Dr. I. WALKER HALL (Manchester) read a paper on

Variations in the Excreta in Gout.

He pointed out the need for the recognition of variations in the excreta rather than permanent alterations. Uric acid was to be regarded as a symptom, not a cause, of the disease. Its varying changes offered some hope of ascertaining its origin. Experimental variations had been produced in healthy as well as in gouty individuals by the administration of sodium salicylate and the production of constipation and in these instances changes in the uric acid output appeared to occur quite independently of cell destruction. After stating the variations of nitrogen, proteid, and fat which occur in gouty individuals and enumerating the sources of endogenous uric acid and purins Dr. Hall described some experiments conducted upon vegetarians and upon gouty patients. In each case he had obtained an increased output of endogenous purins after the administration of sodium salicylate. Similar results occurred during constipation both in normal and gouty individuals. There was no concurrent evidence of increased cell destruction in the body and it seemed possible that the increased output was due to a decreased oxidation of the moiety of uric acid which is normally broken down to urea. In some cases of gout the endogenous purins gradually decreased with the progress of the disease, although the exogenous purins were fairly well metabolised throughout. The quantity of exogenous purins not excreted within 24 hours was very slight. These facts suggested some alteration in the construction and affinities of the endogenous purins as contrasted with the normal properties of the exogenous purins. The deposition of urates in the gouty tissues might be reasonably explained by these altered affinities or by the combination of urates and purins with abnormal albuminous substances. In gout both exogenous and endogenous purins were in excess in the tissues and produced marked alterations in the lymph-flow. Dr. Hall emphasised the need for a collective investigation upon gout in order to accumulate a large number of facts for further guidance and deprecated the tendency to form hypotheses upon insufficient evidence. If further experiments confirmed their power to vary the constituents of the excreta they should soon obtain clearer light upon the etiology of gouty processes.

A short discussion ensued on some of the points raised by the previous papers on Gout in which Mrs. E. L. WALKER DUNBAR (Bristol), Dr. J. HADDON (Hawick), and Dr. GORE took part.

OPHTHALMOLOGY.

FRIDAY, JULY 29TH.

Keratitis Profunda.

In opening a discussion on this subject Mr. W. T. HOLMES SPICER (London) said that the cases which he now brought under review were the accumulation of the past six years; they were not great in number since the affection was comparatively rare. They included only those continuously watched by himself; personal observation was a necessity owing to slight differences in description consequent on the many borderland cases. He was convinced that there was in this group a distinct clinical entity and not merely a variety of interstitial keratitis. In all the 54 cases there was no trace of syphilis, congenital or acquired. 34 cases occurred in males and 20 in females. The difference might be due to the greater liability of men to injury and to devotion to alcohol. The average age of incidence was 40 years. Three-fourths of the cases were associated with alcoholic excess, especially in beer, with gout, rheumatism, and intestinal sepsis; whilst the remainder were connected with pyorrhœa alveolaris, sciatica, dysentery, and pregnancy. It was noticeable that many subjects were prematurely old. In seven cases the onset followed injury from blows, abrasion, or foreign bodies. The average duration of the attack was three months, the slightest lasted only three weeks, and the worst 12 months. As a rule prognosis for vision was good. The condition was characterised by a vascular ingrowth never amounting to a salmon patch, with a progressive opacity of the cornea. In 25 cases the opacity occurred as a central disc, a grey patch in the deepest part of the cornea, occasionally less dense in the centre than at the rim; in 22 it occurred as a conical opacity advancing from the periphery to the centre. An almost constant feature was a striated keratitis, a radial marking from centre to periphery in the disc form, and a marginal finger-like marking pointing to the centre in the conical form. The lines were slightly uneven, sometimes crossing, rarely of double contour. This striation was the earliest symptom of the disease; it tended to be obscured by the advance of the opacity. The opacity was either uniform or seen to be formed by the fusion of a number of maculæ, soft, smooth-edged, and grey-coloured, features which distinguished them from the deposits of keratitis punctata. Keratitis punctata was noted in 21 cases only; he had been inclined to consider the conjunction of keratitis punctata as a means of classification but later experience showed that the irregularity of its presence and onset in either form of the disease was an indication of severity rather than variety. Iritis occurred in only 14 cases; in a very few there was subsequent sectorial atrophy of the iris. Tension was increased in only four cases. No fundus changes could be detected even at the extreme periphery, although he had been prepared to find some; it was possible that any changes existing were so far forward as to be out of the range of the ophthalmoscope. The surface of the cornea was roughened like to an orange rind; sometimes bullæ formed which on rupture suggested a superficial ulceration. In certain cases fluorescin instilled into the conjunctival sac was absorbed and stained the posterior corneal endothelium which was seen as a spotted green layer below the nebulæ. The essential pathological condition he considered to be an œdema of the cornea; evidences of this were to be found in the bullæ of the surface and in the wrinkling of Descemet's membrane producing the striæ. These were probably sequelæ to the altered condition of the posterior corneal endothelium, which being shed in places, indicated by the deep staining reaction, allowed the passage of fluid into the proper substance of the cornea. Wagenmann in 1890 found that section of the long ciliary arteries produced partial opacity of the cornea with changes in the posterior endothelium and vascularisation of the cornea. Koster ligatured the venæ vorticosæ, obtaining a similar parenchymatous keratitis. Von Hippel combining these experimental operations was able to observe the early changes in the endothelium of the posterior corneal layers. It was probable in the light of these experiments that the clinical picture detailed was due to vascular changes and that the variations in the forms observed were the result of a difference in the vessels affected. The treatment was mainly general and dietetic—abstinence from alcohol, the relief of constipation, and the imbibition of much bland fluid. Mercury had no specific action. Atropine to the eye and exclusion of light were of value. Neither iridectomy nor peritomy was of use. Subconjunctival injections of cyanide of mercury or of simple saline solution had no effect save that they were actually harmful in acute conditions.

Mr. HENRY POWER (London) remarked on the value of the signs obtained by the use of fluorescin which had not been in use in his day. He had witnessed cases which he believed to be of the nature described in neglected and ill-treated children and following on abrasions in women exhausted by long suckling and in harvesters. He strongly urged the hopefulness of corneal conditions. Opacities which practically excluded vision for long periods would not infrequently clear up in a marvellous fashion.

Dr. CYRIL WALKER (Bristol) said that his experience indicated that these erratic forms of keratitis were much more frequent in the west country than in London. He thought it was not always easy to distinguish them from interstitial keratitis; indeed, he was inclined to doubt their being a distinct clinical entity. He had also noted cases of recurrence at intervals from four months to two years. Regularity and simplicity of diet he urged as a main factor in their treatment.

Mr. F. M. GRANGER (Chester) had observed such cases more frequently in women than in men and at a rather earlier average age. The lesions were rather of the discrete macular form. He had found the administration of dionine of much value.

Dr. KOLLER (New York) remarked on the warnings commonly given against the simultaneous use of iodides internally and mercury externally; doubtless the warning had a general value but in some cases he had witnessed great improvements with this medication. Dionine he also thought of use.

Dr. A. HILL GRIFFITH (Manchester) found a great difficulty in distinguishing these cases from the milder interstitial forms. He asked if anæsthesia of the cornea and anterior hyalitis, as indicated by dust-like opacities in the vitreous, had been noted.

Dr. G. MACKAY (Edinburgh) had hitherto restricted the diagnosis to cases in which keratitis punctata was present, but he had recently seen some cases in which this symptom was absent.

Mr. SPICER, in reply, said that he was inclined to consider the cases in children described by Mr. Power as kerato-malacia. He thought the later age of the affection he described and the rarity of a simultaneous affection of the two eyes differentiated it from the commoner interstitial keratitis. He had noted recurrence but it was rare. He definitely excluded all cases in which anæsthesia of the cornea was present, since he believed these belonged to a neuro-paralytic group rather than to a vascular group such as these. He had remarked on his inability to find any indications of uveal inflammation, yet he was not without expectation that it would be ultimately noted.

Dr. KOLLER described his

Method of using Cocaine by Subconjunctival Injection for Anæsthetising the Eyeball for Cataract or other Operation.

The conjunctiva was rendered anæsthetic by the usual instillation, then two or three minims of a 5 per cent. solution were injected subconjunctivally at a point remote from the site of the intended section. Injection into the episcleral tissue was objectionable owing to the consequent œdema. In glaucomatous cases he combined the injection with eserine. By this means the iris was rendered completely insensible and manipulation was facilitated.

The PRESIDENT (Mr. R. W. DOYNE, Oxford), Mr. SPICER, and Dr. GRIFFITH asked questions as to the procedure, to which Dr. KOLLER replied.

Dr. LUCIEN HOWE (Buffalo, N.Y.) described his researches on

The Time required for a Normal Eye to swing Laterally through a Given Arc.

The determinations were made in a simple manner by photographing simultaneously the movement of a beam of light projected upon the cornea and of a beam from a vibrating fork. By means of a series of photographs he demonstrated the rapidity and equality of the movements in the healthy eye as compared with those of eyes in paresis or other muscular defect.

The PRESIDENT congratulated Dr. Howe on the exquisite simplicity of his methods, the more so as he had himself spent much time and labour on similar experiments but with much more complicated apparatus, the use and results of which he had demonstrated to the section the previous afternoon. Dr. Howe's methods were applicable by anyone with a reasonable anticipation of success.

Dr. A. MCGILLIVRAY (Dundee) asked whether Dr. Howe had investigated the altered mobility of the eye after such operations as tenotomy and of advancement; he thought the method might elicit some information of the different values of these operations.

Dr. GRIFFITH said that he would like to see the instability of the eye movements in acute alcoholism investigated by the method.

Dr. S. J. TAYLOR (Norwich) was curious as to the results in nystagmus.

Dr. HOWE replied.

Mr. W. W. GRIFFIN (Brighton) exhibited

A Modified Bowman Suction Apparatus for the Removal of Lens Matter in Cataract Extraction.

The feature of the instrument was the automatic withdrawal of the piston by the action of a spiral spring wound round the piston shaft.

Professor HIRSCHBERG (Berlin) said that the operation of suction was almost as old as that of couching. It was practised by the Persians and Arabians certainly as early as A.D. 900. It had been revived in some measure in recent years, but he thought that it was as obsolete as couching.

Dr. JAMES HINSHELWOOD (Glasgow) read notes of a case of

Pure Word-blindness with Right Homonymous Hemianopsia,

and demonstrated the pathological conditions by beautiful photographs prepared by Dr. MacPhail and Dr. A. R. Ferguson of the pathological department of the University of Glasgow. The patient had completely lost the capacity of understanding word symbols, though he retained the knowledge of figures and could write to dictation. Speech and general memory were good. On death, nine years later, much atheroma of the basal arteries and complete destruction of the left occipital lobe below the calcarine fissure were found. The cuneus and angular gyrus were healthy.

Dr. HINSHELWOOD also read a paper on

Word-blindness in Children.

These cases were, he believed, rare and not commonly recognised by ophthalmic surgeons. They were characterised by good vision for all purposes except to word symbols. Very careful and laborious individual teaching resulted in the gaining of the faculty in some slight degree.

The PRESIDENT remarked that he did not think the condition so rarely recognised; he had seen some few cases.

Mr. N. BISHOP HARMAN (London) said that he was surprised at Dr. Hinshelwood's belief that the condition was so rarely recognised by surgeons. In London educational work it had long been known, and the affected children were provided with instruction fitted to them in the admirable "Special Schools" of the London Board (now County Council) schools. In the recent report of the work of the medical department of the London Education Committee by Dr. James Kerr, details were given of the condition and progress of several such cases, with reproductions of their performances in writing and figuring. They had so far appreciated the essential inability of these children to learn word-symbols that they no longer sought to teach them the unattainable, but aimed at developing such faculties as they possessed, with the result that some of the defective subjects were able to earn decent wages in after life. He was pleased to find that at least in one department the much maligned English educational system was ahead of the Scottish.

Mr. SYDNEY STEPHENSON (London) said that such cases were not uncommon; boys were more often affected than girls. He had recorded two amongst the many published.

The PRESIDENT and Mr. G. E. WHERRY (Cambridge) remarked upon features of the cases of the acquired affection.

Dr. HINSHELWOOD replied.

Dr. GEORGE CARPENTER (London) read notes of

A Case of Retinitis in a Child with Large White Kidneys.

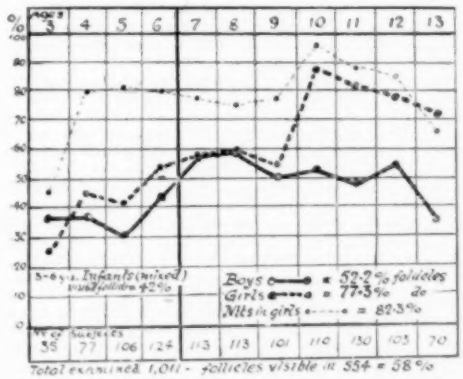
The case was *apropos* of the paper read last year before the Association by Mr. E. Nettleship who commented on the rarity of the conjunction. This case was the only one found during 20 years' observation. The neuro-retinitis was gross and long continued; the diagnosis of kidney affection was made by the condition of the urine and confirmed by the necropsy.

Mr. BISHOP HARMAN read a paper on

The Lymph Follicles in Healthy Conjunctivæ.

The presence of lymph follicles in the palpebral conjunctiva of such a size as to be visible to the naked eye was not infrequently a source of perplexity. In the diagnosis of cases of conjunctivitis it might be questioned, What relation did the follicles bear to the existing inflammation in the case under examination? Were they antecedent and therefore only coincident? Did they indicate some grave tendency, say to trachoma? Or it might be a casual visitor to a school chanced to light on a pupil whose conjunctiva showed many visible follicles and there crowd upon his memory the similitudes of "sago grains," "frog's spawn," and the like to dire conditions of ophthalmia which he had heard at some congress and a storm was raised in the school. Anatomically considered they were minute collections of lymph cells scattered over the conjunctiva immediately beneath the epithelium; they were fairly plentiful in the lower lid, in large numbers in the retrotarsal folds, very sparsely scattered in the conjunctiva which was so firmly attached to the tarsal plate of the upper lid, but were fairly numerous at the angles of this lid; they were absent over the ocular conjunctiva. In structure they did not differ from the many other solitary follicles scattered throughout the mucous membranes of the body. Greeff found that they were visible in 70 per cent. of school children and Delbès in 49 per cent.

of males and in 52 per cent. of females. In June of last year Mr. Harman made a systematic examination of over 1000 children in a London board school situated in the north-east district. The parents of the children were working folk; the children in the majority were well and cleanly clothed. Of 1011 children 554, or 58 per cent., had visible follicles. In 342 infants of ages from three to six years 144, or 42 per cent., showed follicles. In 341 boys from seven to 13 years of age 178, or 52·2 per cent., and in 328 girls of the same ages 232, or 77·3 per cent., the follicles were visible. The girls thus exhibited follicles in much greater proportion than the boys. When the results of the examination of the conditions in girls and boys were plotted down on a chart for each year of life (see chart) it was noted that between the


%
3 4 5 6 7 8 9 10 11 12 13
3-6 yrs. Infants (mixed) with follicles 42%
Boys = 52·2% follicles
Girls = 77·3% do
Nits in girls = 82·3%
No. of Subjects
55 77 106 124 113 113 101 110 130 105 70
Total examined 1,011 - follicles visible in 554 = 58%

The incidence of visible follicles in the conjunctivæ of healthy school children.

ages of three and nine years the curve of incidence for boys and girls was almost the same; the difference came in suddenly and markedly in the tenth year and persisted for the remaining years of school life, a separation averaging about 30 per cent. At the time of this examination he had noted the condition of the hair of the head of the girls. These figures showed a similar curve to that of the follicles in the girls. There was a fair average level between the ages of four and nine years, then a sudden rise of 20 per cent. in the tenth year, followed by a slow decline in the subsequent years. Inquiries showed that at about the age of ten years the girls were expected to take up their share of the home duties. With this responsibility came the liberty to look after themselves, hence the increase of the nits from neglect of the person, and with this an increase of the lymphatic structures indicative of diminished good health. When personal pride came in as a factor the person became cleaner, the curve of nits fell, and with better cleanliness and health the curve of the follicles also declined. "Folliculitis" or any term that would indicate the existence of an obvious inflammation had been avoided; indeed, there were no signs of inflammation of the conjunctiva of any sort. There were some few cases in which the follicles were gross in their size, yet there were no signs of inflammation. Recently extreme cases of this kind had been seen at hospital. Two were Jewish emigrants desirous of proceeding to America but who had been inhibited by the shipping agent; the third was an English lad. In all these cases the follicles were as large and prominent as they well could be; they had a normal distribution, the lower folds were filled with row on row of large pale oval bodies, each about 1·5 by 3 millimetres, the upper fold of transition and the angles were similarly crowded, and a few were dotted here and there over the upper tarsus. In the two youngest patients there were small semi-gelatinous swellings on the upper ocular conjunctiva away from the fold. The epithelium of the conjunctiva covering the follicles was quite normal in appearance; the delicate conjunctival vessels could be seen passing over them in their normal course. Of symptoms associated with the eye condition there were none. In one case the upper fornices were excised and the follicles were completely removed by vigorous expression and "brossage"; in a fortnight the conjunctiva was free from follicles but it was covered with numerous bands running from the lids to the ocular conjunctiva. The other cases were treated by the gentlest expression possible and with blue-stone; in a month from the time of the expression the conjunctivæ were normal in appearance; there was no scarring save for the fine line which marked the site of a portion excised for histological examination. One of these latter cases left for America and since he had never reappeared Mr. Harman judged that he had passed the immigration officers, but the boy who was treated by "brossage" could never get to America, his scarred conjunctiva told a tale which would bar him at every port. Sections of the mucosa taken from two cases showed an absolutely normal conjunctiva, save for the monstrous size of the follicles. The epithelium was normal, the submucosa was delicate and free from signs of inflammation, the follicles, although monstrous in size, conformed exactly to the anatomy of a solitary follicle, as seen, say, in the gut, the cells were soft and round, packed in proper zones, and there was no excess in the endothelial stroma; in looking at the sections the remark of Brush, the discoverer of the follicles of the conjunctiva, that they and the follicles in Peyer's patches were similar was irresistibly brought to mind. The feature of these conjunctivæ was an immense increase of the lymph cells of local origin, an abnormal development or, rather, accumulation of cells in the local follicles which had failed to pass in due course into the lymph stream, and a "lymph-follicle-stasis." There was no leucocytosis of external origin. None of these features conformed in any way to trachoma, which was characterised by a marked hyperplasia of the endothelial stroma of the follicles and general adenoid tissue of the lids. Such sections could have been obtained from most of the 563 children in the school of 1011. If the condition were, as was held by some, trachoma, then all these children were condemned to the diagnosis, a conclusion which was absurd. Such conditions of the lymph follicles were not contagious; there was no danger of these cases setting up a vicious condition of the same or any other order in their neighbours; the subject of the disorder was, however, liable in the unhealthy and stagnant state of the local lymph circulation and general ill-health to fall a victim to any virus that might be about, with the result that the contraction of a simple catarrh that would pass almost unnoticed in another would in such a case look serious and receive the formidable name of "follicular conjunctivitis" and the child be excluded from school as dangerous. He examined bacteriologically 12 consecutive cases of this order. In seven the brief history of acute symptoms indicated a catarrh supervening on follicular hypertrophy; the determining causes of the inflammation were found to be: Koch-Weeks's bacillus twice, Morax bacillus once, steptococcus once, and staphylococci thrice. All the cases made a rapid recovery. Of five, in which the diagnosis was complicated by a somewhat lengthy history and some tendency to papillary exaggeration, three were finally diagnosed as simple conjunctivitis, one proved to be trachoma, and one remained in doubt. The conclusion from this evidence was that a diagnosis of "follicular conjunctivitis" was defective; it did not take into consideration the frequency with which enlarged follicles were seen in healthy subjects; it gave no indication whether the case was to be taken to be a simple catarrh occurring in such a subject or whether the examiner conceived it to be something of a more serious nature.

The PRESIDENT and Dr. ADOLPH BRONNER (Bradford) asked questions, to which Mr. HARMAN replied.

Dr. BURNHAM (Toronto) read a paper on

The Combined Treatment in Disease of the Eye, especially in that of the Uveal Tract.

This combined treatment of the internal administration of mercury and the iodide of potassium associated with the hypodermic injection of pilocarpine he had practised for 15 years. He described two cases of sympathetic ophthalmia, one in which the acute attacks were stayed and after nine months vision improved from perception of light to $\frac{4}{60}$. The second case, of similar order, in an active state but of longer duration, had only perception of light, minus tension, and occluded pupil. Under the combined treatment for eight months the eye became so quiet that he felt justified in removing the lens with a result that visual acuity reached $\frac{6}{9}$ and J.1. No relapses had occurred in either case after several years. In a case of chronic articular rheumatism with transverse calcareous band useful vision was obtained; one of acquired syphilitic cyclitis with occluded

pupils and qualitative vision obtained in one and a half years $\frac{24}{60}$ vision in one eye and $\frac{36}{60}$ in the other. In some severe types of hypopyon kerato-iritis and in old sclero-keratitis the clearing of nebulæ was marked; these were cases in which all other measures had failed. He considered the combination of drugs which he had used peculiarly adapted to promote vigorous tissue change.

Dr. BRONNER read

Notes on a Case of Thrombosis of the Cavernous Sinus due to Empyema of the Sphenoidal Sinus.

Cases of thrombosis of the cavernous sinus were not very common. This case, occurring in a slightly anæmic but otherwise healthy girl, was remarkable in that it was impossible to account for the origin of the thrombosis during life. The nares were healthy. There had been no abnormal discharge from the nares. There had been some severe headache and pain but no sickness; this was followed in a few days by slight swelling of the right eyelids, chemosis, and well-marked proptosis. There was no strabismus but movements of the eye were limited. The fundus was normal. The symptoms gradually grew worse. The temperature varied between 99° and 103° F. A rigor, with a temperature of 104·6° and profuse perspiration, occurred despite treatment with calomel and local leeching. Cerebration was slightly impaired, but questions were answered correctly though slowly. After a fortnight the symptoms diminished and swelling of the retinal veins of the right eye was noted. On a relapse antistreptococcic serum was injected several times without benefit. The temperature rose to 105° and 106° almost daily and there were several slight rigors and the left jugular vein became inflamed. Vision of both eyes was fairly good considering the patient's mental condition. On the eighteenth day offensive diarrhœa set in and continued until death on the thirtieth day. Post mortem both cavernous sinuses were found to be filled with purulent thrombus. The left lateral and petrosal sinuses were gangrenous, the longitudinal sinus being filled with clot. There was some pus (sweet) at the apex of both orbits. Both sphenoidal sinuses were full of pus and granulation tissue; the septum was practically destroyed. The ethmoidal and frontal cells were apparently not affected. The empyema of the sphenoidal sinus doubtless caused the thrombosis of the cavernous sinus. This was an exceedingly rare occurrence. The absence of disease in the sphenoidal sinus, the late and slight affection of the optic disc and retinal veins without retinal hæmorrhages, and the absence of cerebral irritation and vomiting were remarkable. Operation was proposed but was not consented to. Germain[1] had collected 182 cases of thrombosis of the cavernous sinus with 16 recoveries. 134 necropsies were recorded. In 31 cases one sinus only was affected; in all the others both were affected.

The proceedings closed with a vote of thanks to the President, Vice-Presidents, and secretaries, proposed by Mr. POWER and seconded by Dr. HOWE.

Attached to this section was an exhibition of surgical and x-ray instruments and a pathological museum. Experiments relating to Colour Vision were demonstrated by Dr. G. J. BURCH, F.R.S.; on Colour Blindness, by Dr. F. W. EDRIDGE-GREEN; and on Colour Photography, by Miss ACLAND. Instruments were exhibited by Mr. A. MCGILLIVRAY, Dr. E. MADDOX, Mr. S. STEPHENSON, Dr. K. GROSSMANN, and Mr. ANDREW LITTLE. A large series of pathological specimens and drawings were shown by the PRESIDENT, Mr. W. H. H. JESSOP, Mr. STEPHENSON, Mr. VICTOR MILLER, Mr. OGILVIE, and Professor M. M. MCHARDY; and Demonstrations on the Variability of the Fields of Vision with different illumination in cases of Tobacco Amblyopia were given by Mr. N. BISHOP HARMAN.

THE PATHOLOGICAL MUSEUM.

IT was at a meeting of the British Medical Association at Oxford in 1868 that the annual museum of the Association was first initiated and it is at Oxford in 1904 that the museum has been reinstalled in its rightful position. The idea of the founders was that it should form a means of bringing the mass of the profession into touch with recent pathological methods and data, especially such as had some bearing upon the practical work of the profession, and that these annual exhibitions should summarise, as it were, the work done in pathology during the preceding year from a clinical, anatomical, and laboratory standpoint. The advances made in pathology and the new light thus shed upon the science of medicine during the 36 years have been extraordinary. But the annual pathological exhibition of the Association has not, as has been pointed out on more than one occasion in these columns, kept pace with the advances in the science of medicine. This year, however, the museum has once more taken its proper place, and the wealth of material collected in two large rooms, conveniently adjacent to the pathological and anatomical sections of the Association, affords examples of nearly all the departments in which recent researches have been made. Indeed, so handsome was the response to invitations this year that the collection in the museum proper was a trifle overcrowded and there were also two overflow exhibitions. The excellent collection of ophthalmological specimens was housed in the junior common room of Keble College and the section of dermatology arranged specimens supplementary to those shown in the Pathological Museum at the meeting-place of the section.

Tropical diseases were well represented. In this department of medicine many curious names unheard of before are now becoming quite familiar even to those who spend their days in Great Britain. The trypanosoma has occupied a good deal of attention lately. It is a flagellated protozoon or worm-like organism found free in the blood and moving with a screw-like progress, blunt at one end, with a flagellum at the other, its length including the flagellum being only about 18μ. It produces a disease called trypanosomiasis, long known in West Africa, characterised by irregular pyrexia, erythematous rashes, and enlargement of the liver and spleen. It has more recently been found in the blood of patients suffering from the disease known as "sleeping sickness," a disease in which polyadenitis is a prominent feature. When the trypanosoma gains access to the cerebro-spinal fluid (although it may have previously existed for years in the blood) the patient develops the narcotic symptoms of sleeping sickness. Interesting specimens illustrating the life history of the trypanosoma and the pathology of "sleeping sickness" and kala-azar were exhibited by Dr. David N. Nabarro (London) and Dr. G. C. Low (London) respectively. Kala-azar is a disease in which enlargement of the spleen occurs. It is met with in China and other malarial districts and was for a long time confused with malarial fever. Certain bodies have now been found in this disease, known after their discoverers as Leishman-Donovan bodies, which are believed to have some relation to the trypanosoma, though what that relationship is still remains to be worked out. The nature of these remarkable bodies has been much debated and only quite recently a telegram, dated June 29th, has been received from Captain Leonard Rogers, I.M.S., stating that he had succeeded in developing the trypanosoma from cultures of the Leishman-Donovan bodies. It would seem probable, therefore, that the trypanosoma in its various phases of evolution is responsible not only for the condition known as trypanosomiasis but also for "sleeping sickness" and for kala-azar. Excellent photographs and sketches of ankylostomiasis and bilharziasis (two grave forms of anæmia resulting from their respective parasites) were exhibited by Dr. F. M. Sandwith (Cairo); internal lesions produced by ankylostoma by Dr. M. Armand Ruffer (Egypt); and specimens of "kra-kra" or "craw-craw" by Mr. J. Dencer Whittles (Birmingham). Craw-craw is a papulo-pustular eruption somewhat resembling scabies and occurring mainly among the inhabitants of South Africa. In connexion with the last-named disease a photo-micrograph was exhibited of the nematode worm (filaria perstans) causing this disease, which had been found in the blood of a female patient resident at Tenby, South Wales, in whom infection had taken place at Birmingham whilst on a visit in February, 1903. It would have been interesting to know the source and mode of infection.

In neurology the scientific worker requires to be patient and to be content to devote much time with the prospect of what appears to be a very small return. The microscopical sections exhibited by Dr. F. Griffith (Liverpool) and Dr. W. B. Warrington (Liverpool) illustrated the truth of this. These sections revealed the changes which take place in the posterior spinal ganglia after section of their various connexions. They represented a good deal of laborious work. We know that the cells of the spinal ganglia have some special relation with the sympathetic system and a marvellous but ill-defined trophic action on the skin and other tissues. We know, for instance, that the lesion of herpes is situated

[1] Boston Medical Journal, May 1st, 1902.

in these ganglia. Disorders of the sympathetic and vasomotor systems have received a good deal of attention lately from a clinical standpoint, and these structures would well repay a careful anatomical and physiological study in the laboratory. A knowledge, for instance, of the control which the ganglia exercise on the sympathetic system would be of great value. Dr. R. G. Rows (Lancaster) and Dr. David Orr (Manchester) exhibited nine microscopic specimens prepared by Marchi's method showing acute lesions of the posterior columns of the spinal cord. Fine bacilli were seen within the cell bodies and in their immediate neighbourhood. These observations are in keeping with the researches of Dr. James Taylor and others into the now well-known toxic origin of spinal sclerosis. Dr. J. S. Collier (London) and Dr. E. F. Buzzard (London) exhibited specimens and photographs taken from four cases of congenital diplegia in three of which certain congenital deficiencies in the nervous system were discovered. There is no doubt that some cases of congenital diplegia are due to injuries at birth but these specimens add further proof that a good many of them are dependent on abnormal or arrested development of the hemispheres and other congenital deficiencies in the nervous system. Incidentally Dr. Collier's method of staining nerve cells (which has been described in the *Review of Neurology and Pathology*) was illustrated.

The pathology of cancer was well illustrated by observers holding diverse views. Dr. E. H. Bashford (London) and Mr. J. A. Murray (London) exhibited specimens illustrating the preliminary changes which take place in the nucleus and in the chromatin of the nucleus in the development of cancer, the cell of the somatic and heterotype mitoses in trout, and the cell conjugation in transplanted mouse tumour, changes which these gentlemen regard as essential and as pointing to the origin of cancer in a "physiological rest" or residue of embryonic tissue rather than the result of a protozoic process. Dr. W. Ford Robertson (Edinburgh) and Mr. Henry Wade (Edinburgh) on the other hand exhibited specimens illustrating the development of plasmodia in the turnip in the disease called "finger and toe." These observers regard the disease as a protozoic process and if, as they maintain, this plasmodium in the turnip is identical in the stages of its growth with the protozoon found in cancer their results will prove extremely interesting. Fuller details of their views were given in the demonstrations at the Vice-Chancellor's conversazione and are reported in THE LANCET of August 13th, p. 467.

The pathology of acute rheumatism was illustrated by some observations made by Dr. W. Vernon Shaw (Oxford) and Dr. J. M. Beattie (Edinburgh), both of whom exhibited the lesions produced by artificial inoculation of acute rheumatism in animals. The results arrived at by these observers fully bear out the statements of Dr. F. J. Poynton and Dr. Alexander Paine and go far to show that acute rheumatism is due to a specific microbe. The diplococcus has been isolated; the inoculation of cultures has produced the same disease in animals, from whom again the characteristic diplococcus has been collected—in short, all the classical tests of an organism being the specific cause of a disease, as required by Koch, have been fulfilled.

Cardio-vascular pathology was also well represented. Dr. G. A. Gibson (Edinburgh) exhibited an instructive series of specimens of pericarditis and mediastino-pericarditis, several of which were of tuberculous origin. One of these had been diagnosed during life chiefly by the paradoxical pulse, a pulse intermitting every fourth beat in correspondence with the respiratory rhythm. Professor T. Clifford Allbutt (Cambridge) exhibited a specimen of chronic aortic stenosis occurring in an elderly man who had suffered for the last two or three years of life from typical attacks of Stokes-Adams' disease, during which the heart beats had numbered only eight to 12 per minute. A large number of very careful drawings of the microscopic changes in the liver in mitral stenosis and other cardiac conditions, accompanied by specimens of the liver to show the naked-eye appearance, were exhibited by Dr. R. N. Salaman (London). Several important contributions have recently been made to the subject of arterial disease. Unfortunately considerable confusion exists as to the meaning of the term atheroma, which in Germany appears to be regarded as identical with arterial sclerosis. Many English observers, like Dr. W. Russell,[2] regard atheroma as a totally distinct affection. The specimens and photo-micrographs exhibited by Dr. T. D. Savill (London) go to confirm this view. Among other cases he had investigated that of a woman, aged 100 years, who had presented extremely profuse atheroma not only in the larger arteries (which is usual in old people) but even in the ultimate ramifications of the smallest vessels. She had died from hypostatic congestion of the lungs and had never exhibited circulatory symptoms of any kind during life. Others of Dr. Savill's specimens illustrated the anatomical condition which he has described as arterial hypermyotrophy[3] and the subsequent degenerations which take place in the tunica media—i.e., the muscular and most important coat of the arteries.

Interesting specimens bearing on gynæcology, too numerous for us to notice in full, formed part of the museum. Dr. James Ritchie (Oxford) and several others exhibited specimens of chorion epithelioma, a disease due to the inclusion of the trophoblast in a part of the body distant from that in which it is usually found. Mr. Cuthbert Lockyer's series were very interesting, especially one of them which showed how a fibromyoma may become sarcomatous and malignant. Dr. Nathan Raw (Liverpool) showed a number of specimens of tuberculous disease which illustrated his paper on Human and Bovine Tuberculosis delivered in the Section of Medicine.

In the department of surgery there were also many interesting exhibits. We have rarely seen anything more perfect of their kind than Mr. W. G. Richardson's (Newcastle-on-Tyne) series of specimens illustrating the anatomy, comparative anatomy, development, and pathology of the prostate and male genitalia. Removal of the prostate gland is coming more and more into vogue with surgeons, and these specimens, together with those exhibited by Mr. John T. Hewetson (Birmingham) and Mr. P. J. Freyer (London) who advocates the suprapubic method, were particularly opportune. A series of very instructive radiographs, illustrating Colles's fracture and congenital dislocation of the hip treated by Lorenz's method, were shown by Mr. Robert Jones (Liverpool) and Dr. David Morgan (Liverpool), and a great number of other diseases of the bones and joints were illustrated. These specimens would have well repaid a much longer study than it was possible to give to them in the all too short four days during which they were available. Mr. J. Rutherford Morison (Newcastle-on-Tyne) exhibited a life-sized model, together with photographs illustrating the effects of lightning. Two men were seated under a tree and the lightning swept from the tree to the ground between the men, throwing them many yards apart. It tore the boot and clothes of one of them into ribbons down the right side. Yet, if we may judge by the photographs, the patient completely recovered. Another extraordinary case was that of a young man in whom four inches of a hay fork became imbedded in the superior maxilla and remained there for two years. Another specimen exhibited the effects of a tooth-plate which had perforated through the œsophagus into the left bronchus and which was removed by posterior œsophagotomy. Specimens illustrative of the absorption of ligatures were exhibited by Sir William Macewen (Glasgow). By various methods of preparation a ligature can be made to undergo absorption in the wound at the end of three, four, five, or more days, according to the requirements of the case. The wound is dressed simply with a strip of gauze painted over with collodion which can be peeled off on the desired day bringing with it the unabsorbed part of the ligatures. At these annual exhibitions there is generally a collection of appendices removed by operation. Dr. G. Grey Turner (Newcastle-on-Tyne) and Dr. W. Blair Bell (Liverpool) exhibited a particularly interesting series of specimens removed during the preceding year or two which had been studied and labeled with extreme care. Mr. F. M. Caird (Edinburgh) showed fifty preparations to illustrate the surgery and pathology of the stomach, intestine, and kidney.

Several useful models were on view. Mr. H. G. Armstrong (Crowthorne) showed a "waistcoat pocket" albumin testing apparatus, Dr. J. Mackenzie (London) a sphygmograph and blood-pressure recording instruments, Dr. I. Walker Hall (Manchester) a purinometer for the clinical investigation of urinary purins, and Mr. C. W. Cathcart (Edinburgh) showed a cast illustrating an improved method for making papier-mâché casts of pathological specimens or dissections. The facility with which these casts can be

[2] THE LANCET, June 1st, 1901, p. 1519.

[3] Transactions of the Pathological Society of London, 1904.

made should recommend them to those who wish to make their museums complete. The great usefulness of skiagraphy in medicine was proved by the excellent skiagraphs of acromegaly, chronic pulmonary osteo-arthropathy, and myositis ossificans exhibited by Dr. G. A. Gibson (Edinburgh), and those of early pulmonary tuberculosis, and pleural effusion shown by Dr. A. Stanley Green (Lincoln). The drawings and colour sketches were of unusual excellence. One of these, a case of facial ecchymosis and pigmentation occurring at the catamenial periods, afforded another example of the close association between the menses and the vaso-motor sympathetic system. Such cases should be investigated side by side with the *œdème bleu* of Charcot and the angio-neurotic œdema which has lately been receiving attention. The investigation would be a difficult one, because it would necessitate a simultaneous study both of the sympathetic system and the peculiar qualities of blood at the time. A number of interesting specimens were exhibited to show the efficiency of the two, three, and four colour printing processes. Photography in colour and its methods were demonstrated and photo-micrography was shown in a high degree of perfection by Mr. Albert Norman (London) and Dr. W. A. P. Waters (Oxford).

It has been impossible in the space at our disposal to notice more than a few of the leading examples in this excellent collection. We are glad to observe that the suggestion made in these columns last year, that short demonstrations on the museum specimens should be held from time to time, was carried out at the Oxford meeting. On Wednesday lantern demonstrations of colour photography were given by Mr. E. Sanger Shepherd and Mr. J. Hall Edwards; on Thursday, Dr. A. E. Wright demonstrated the preparation and use of the pipettes which he has introduced for bacteriological research, Dr. R. N. Salaman gave a demonstration of the reservoir action of the liver in cardiac disease, and Dr. Walker Hall demonstrated his purinometer; and on Friday Mr. C. W. Cathcart gave a lantern demonstration illustrating the gradation of malignancy in bone tumours. The number of visitors to the museum was one of the largest within our recollection. The interchange of views between members meeting from a distance and the discussion of the specimens, which were continuously carried on from the opening to the closing of the museum were of the most instructive kind. Such discussions added not only to the interest but to the scientific value of these gatherings. There is no doubt that the Pathological Museum was one of the most attractive features of this year's meeting of the Association, and Dr. James Ritchie, Dr. E. W. Ainley Walker (the secretary), and the committee are to be congratulated heartily on their unqualified success.

Looking Back.

FROM

THE LANCET, *SATURDAY*, AUGUST 19, 1826.

DIRECTIONS FOR THE USE OF THE STETHOSCOPE.[1]

Almost seven years have now elapsed since LAENNEC proposed mediate auscultation as a mode of exploring the diseases of the thoracic viscera: a period sufficient in this busy age of investigation to try the merits of any hypothesis; and to outlive such a probation is almost enough to ensure permanent popularity. After various trials with materials of different density, a perforated cylinder of moderately light wood has been found the most convenient; and what may appear at first in opposition to an axiom in physics, in the present case the most accurate conductor of sound. To this cylinder the name *stethoscope* has been given; a name which very well expresses its principal use. The stethoscope merited, and has now obtained the patronage of the majority of scientific practitioners, and up to the present time has had the rare fortune of being without one decided public opponent. It is employed almost universally in France, and extensively in Germany, but as yet not so frequently in this country as it deserves; we are therefore glad to find that Sir JAMES MACGREGOR has recently ordered the army surgeons to use it generally, and to report the results of their investigations.

[1] An excerpt only has been transcribed.

The appointment of LAENNEC to La Charité gave to him and to the numerous students who attend his clinic from all parts of Europe, more frequent opportunities of studying auscultation, than they could have ever hoped for at the Necker Hospital; and it is to this circumstance we are principally indebted for the improved shape in which the present edition of his work has appeared.* We regret to say that his health is in a very pracarious state; he is obliged to leave the clinic to the superintendence of others, and is gone into Britany, where he will pass the summer.

The first edition of Laennec's work has been translated into German, under the superintendence of Dr. FROBIEP, at Weimar, and into English by Dr. FORBES; it has also found its way into the Italian and Russian languages. The last edition of the valuable work of BERTIN,[*2] edited by his friend Bouillaud, on the diseases of the heart and large vessels, and the clinical reports published by LERMINIER and ANDRAL,† contain many facts illustrative of the use of the stethoscope. Dr. FORBES,‡ also, in 1824, published a considerable number of cases observed at the Chichester Dispensary; but the greatest number of interesting facts has been collected by Dr. LOUIS of Paris, who during the past year has published a very respectable work on pulmonary consumption.§ It is true that Andral has given a negative testimony against some of the signs said to be afforded by the stethoscope, but this is of no great weight, since Laennec had before admitted the existence of the same objections, under certain circumstances.

Many persons have inquired why Laennec has called it *mediate* auscultation; it is to distinguish it from *immediate* auscultation, or the direct application of the ear to the chest; a mode of examination with which the father of physic was so well acquainted, that he thought he could distinguish a serous from a purulent effusion in the thorax. "You will know by that," says he, "that the chest contains water and not pus, if by applying the ear for some time to the parietes, you hear a sound like to that of boiling vinegar."‖ It is singular that the passage never arrested the attention of physicians so as to induce them to make any use of it; the commentators of Hippocrates passed over it as a matter of little consequence, and Laennec confesses that many years before the idea of mediate auscultation suggested itself, he had read the same passage without exciting any particular attention.

In the summer of 1816, Laennec was called to a young lady who presented the general symptoms of disease of the heart; the application of the hand to the chest, and percussion, afforded very little assistance, and immediate auscultation was interdicted by the sex and *embonpoint* of the patient. The recollection of the well known fact, that the tap of a pin at one end of a beam could be heard distinctly at the opposite end, induced him at the moment to avail himself of this acoustic phenomenon. He took a quire of paper, rolled it tightly together, applied one extremity over the region of the heart, and putting the ear to the other, was surprised to find that he could distinguish the pulsation of the heart in a more distinct manner than he could before do with the naked ear. Having hit upon the principle, he extended its application to the investigation of the various sounds produced in the chest by the respiration, the voice, and the accidental presence of fluids in the lungs, pleural sacs, and pericardium. He immediately commenced a series of observations at the Necker Hospital, which have afforded a large number of new and safe signs, easy to be understood for the most part, and calculated to make the diagnosis of almost all the diseases of the lungs, pleura, and heart, more circumstantial and certain than the surgical diagnostics established by the aid of the probe or the finger.

* Traité de l'Auscultation Mediate et des Maladies des Poumons et du Cœur. 8vo. Paris, 1826.

† Clinique Medicale, tome III. Paris, 1826.

‡ Treatise on Percussion; an extended analysis of this work, which contains also a translation of Avenbrugger's, will be found in THE LANCET, Vol. V. Nos. 4 and 5.

§ Recherches Anatomico-Pathologiques sur la Phthisie Pulmonaire, Paris, 1825.

‖ The passage is as follows:—Τούτῳ ἦν γνοιης, ὅτι οὐ πυον, ἀλλὰ ὕδωρ ἐσι. καὶ ἢν πόλλον χρόνον προσεχων τὸ οὐς ἀκουαζῃ πρὶν τὰ πλευρα ξέει ἔσωθεν οιων ψόφος. Hipp. de Morbis, II. Sect. 59, according to the text of Froben and Mercurialis; but Vanderlinden has ὠζει for ξέει; we know not upon what authority.

[*2] Traité des Maladies du Cœur et des gros vaisseaux, redigé par Bouillaud. Paris, 1824. For an analysis of which, see THE LANCET, Vol. V. No. 7.

THE LANCET.

LONDON: SATURDAY, AUGUST 20, 1904.

Mr. Balfour on the New Theories of Matter.

IN his presidential address delivered before the British Association for the Advancement of Science at Cambridge, an abstract of which we publish this week, Mr. BALFOUR, with the candour and simplicity which have made him so engaging and forceful a personality, disclosed to his audience his personal views of the new theories of matter. The Prime Minister is not an original worker in the domain of science or an expert in laboratory procedure, but the reflections which the new theories of matter have suggested to his mind bespeak a profound observer as well as a close student of the work going on in many scientific fields. It will be remembered that Mr. BALFOUR'S illustrious uncle, the late Lord SALISBURY, who was president of the British Association at Oxford in 1894, delivered on that occasion a very able and remarkable address entitled "The Unsolved Riddles of Science." The lesson conveyed by Lord SALISBURY was that all around us there lie strong proofs of intelligent and benevolent design, but Mr. BALFOUR approaching a similar theme with a more vaguely philosophic equipment is not able to come to quite so concrete a conclusion. He has been tempted to review our ignorance rather than our science. There is a pessimistic tone throughout his address, for the achievements of past researches, despite their brilliance, would seem to suggest to him how hopeless it is to expect that the final clue to the central mystery will ever be found. Whilst admitting that the advances of each section of knowledge have been great the hope of understanding the origin and meaning of life is as far off to him as ever, and his lesson appears to be that human power and perception have limitations against which it is useless to struggle. The danger of such reflections is that they may tend to damp the praiseworthy enthusiasm of the investigator. They would do so were it not that the man who is in earnest is proud to win even "a small strip from the desert" and so to push forward the boundary of the oasis of knowledge in which we live. Let us at least have the joy of accumulating knowledge, though there may be no prospect of the last goal ever being reached. The beautiful peroration of an address delivered by Sir WILLIAM CROOKES on a similar occasion ran as follows: "Steadily, unflinchingly," he said, "we strive to pierce the inmost heart of nature, from what she is to reconstruct what she has been, and to prophesy what she yet shall be; veil after veil we have lifted and her face grows more beautiful, august, and wonderful with every barrier that is withdrawn." These are the sentiments which stimulate the true worker, and we regret any limitations being even theoretically set to our intellectual march forward.

The extraordinary stimulus given to our conceptions of the nature of matter by the discovery of radium and by a consideration of its marvellous properties was probably all the time in Mr. BALFOUR'S mind though throughout the address the subject was not mentioned. He, in common with many, has no doubt sustained something like a mental shock to learn that no longer must the atom be regarded as the smallest conceivable particle of matter but rather as a tiny cosmos in itself, swarming with electrified particles travelling freely in all directions, which particles or electrons may appear at one time as matter and at another time as force. "There are those," he said, "who regard gross matter, the matter of everyday experience, as the mere appearance of which electricity is the physical basis; who think that the elementary atom of the chemist, itself far beyond the limits of direct perception, is but a connected system of monads or sub-atoms which are not electrified matter but are electricity itself." Again: "Two centuries ago electricity seemed but a scientific toy. It is now thought by many to constitute the reality of which matter is but the sensible expression. It is but a century ago that the title of an ether to a place among the constituents of the universe was authentically established. It seems possible now that it may be the stuff out of which that universe is wholly built." With characteristic subtlety of phrase he adds that matter is not merely explained, but explained away, by assuming that the atom is now no more than the relatively vast theatre of operations in which minute monads perform their orderly evolutions, while the monads themselves are not regarded as units of matter but as units of electricity. Mr. BALFOUR next proceeded to show by a somewhat original line of reasoning how really unfitted man is, after all, to comprehend all around him in spite of his remarkable success in bringing wonderful phenomena to light. "It is certain," he said, "that our powers of sense perception and of calculation were fully developed ages before they were effectively employed in searching out the secrets of physical reality, for our discoveries in this field are the triumphs but of yesterday. The blind forces of natural selection, which so admirably simulate design when they are providing for a present need, possess no power of prevision and could never except by accident have endowed mankind, while in the making, with a physiological or mental outfit adapted to the higher physical investigations. So far as natural science can tell us every quality of sense or intellect which does not help us to fight, to eat, and to bring up children, is but a by-product of the qualities which do. Our organs of sense perception were not given us for purposes of research, nor was it to aid us in meting out the heavens or dividing the atom that our powers of calculation and analysis were evolved from the rudimentary instincts of the animal." Upon this exposition follows Mr. BALFOUR'S conclusion. It is, he thinks, due to these circumstances that the beliefs of all mankind about the material surroundings in which it dwells are not only imperfect but fundamentally wrong.

The gist of Mr. BALFOUR'S reflections suggested by the new theories of matter is contained in his forcible presentation of the case in the following sentences: "Extend the boundaries of knowledge as you may; draw how you will the picture of the universe; reduce its infinite

variety to the modes of a single space-filling ether; retrace its history to the birth of existing atoms; show how under the pressure of gravitation they became concentrated into nebulæ, into suns, and all the host of heaven; how, at least in one small planet, they combined to form organic compounds; how organic compounds became living things; how living things, developing along many different lines, gave birth at last to one superior race; how from this race arose, after many ages, a learned handful who looked round on the world which thus blindly brought them into being and judged it and knew it for what it was—perform, I say, all this and though you may, indeed, have attained to science in nowise will you have attained to a self-sufficing system of beliefs." It would, indeed, be a remarkable consummation of the penetrative instincts of the human race if the fundamental truth should be so clearly revealed that it would be impossible for a sceptic to remain. We cannot, some would say we must not, expect so much; but the more, to use Mr. BALFOUR'S words, we attain to science the more chance is there of appreciating the wider and deeper lessons taught by the universe, and the less reason will there be for resigning ourselves to the belief that thus far and no farther may we go.

Colonies for Epileptics.

THE letter from our Australian correspondent which appeared in THE LANCET of August 13th contained an account of a deputation organised by the National Council of Women which recently waited on the Minister of Lands to obtain, if possible, a grant of an area of land suitable for the establishment of a colony for epileptics. The deputation pointed out that in the community of Victoria there were from 1600 to 2000 persons suffering from one of the most distressing afflictions with which humanity is acquainted. Only one-fifth of the number of known epileptics could be provided for in existing institutions, and the deputation further pointed out that epileptic children were prevented from obtaining occupation in the ordinary way and that the development of the disease was favoured by the want of proper mental training. The Minister's reply was of the usual kind. It sounded stereotyped and temporizing, but it must be recognised that on the spur of the moment responsible officials can only respond to deputations in this way. Nothing is gained by the promise of reforms or innovations which the Government may not be able to carry out. The Minister of Lands said that his entire sympathy was with the deputation and that he would see what could be done, but the question of available land that was also suitable could not be settled offhand.

Epilepsy has from the earliest ages been regarded as peculiarly distressing and its pathology is in many directions still unknown to us. The suddenness of the attack, the racking convulsions, and the falling down gave the old observer the impression of an onslaught by some evil spirit, and hence the Greek term for the disease, ἐπιλῆψις. Hence, also, possibly the word used by our Anglo-Saxon ancestors "onfall," though it is not known for certain what "onfall" was. But it is almost certain to have been epilepsy, so well known to the people under its common title, the "falling sickness." Owing to the uncertainty of the time of the attacks and in many instances to their occurrence without any warning or "aura" the epileptic is rendered quite unfit for most ordinary occupations of life. Unless he can be constantly watched by someone he must be ever in peril and perhaps a source of peril to the community. He may injure himself by the mere violence of his fall, in crowded streets he may be run over, or, as of old, it may be that "ofttimes he falleth into the fire or into the water." He is a burden to himself and to his friends. An epileptic among the labouring classes is almost precluded from obtaining any employment whatever, while as for treatment, although the effects of the administration of one of the bromides are very marked and in many cases, up to a certain point at least, successful, yet, as Sir WILLIAM GOWERS has remarked, "bromide has its drawbacks. It is not surprising that it should often interfere with the normal function of the brain; the marvel is that it should so often arrest the abnormal and leave the normal almost or completely undisturbed." The difficulties which encompass the life of an epileptic have therefore led to the establishment of colonies in which those suffering from epilepsy can live under the care of those who can tend them during an attack and ward off the dangers. A peculiarly sad feature about this disease is that it can exist coincidently with the highest mental and moral qualities and, without going so far as some modern writers have done in this direction, it may safely be said that many men of genius have been epileptic. On a lower mental scale than this the epileptic during the interval between his attacks is quite capable of doing useful work, such as gardening or carpentering, and it is those forms of employment which are generally afforded in an epileptic colony. In this country such colonies have been established at Godalming, at Chalfont St. Peter, at Chelford in Cheshire, at Maghull near Liverpool, and one quite recently under the auspices of the London County Council at Ewell. In other countries the most notable one is Craig Colony in the State of New York, but this colony, like that at Chalfont St. Peter, only receives patients who are comparatively sane and free from obvious evidence of cerebral paralysis. The Ewell colony, on the other hand, was established with a view to the reception of the epileptic insane who were formerly under care in the metropolitan asylums. Such patients, although they may be insane, are yet, if free from dangerous delusions and criminal instincts, admirably fitted for farming and industrial colonies. They are capable of being educated, and if set to work in an institution where their special affliction may be cared for their labours may be remunerative to the extent of rendering the institution to a considerable extent self-supporting. On the other hand, if left to find their own living in the world at large they would most probably starve, for their labour, intermittent as it must be, has but a small market value.

We presume that the numerous epileptics referred to by the deputation of the National Council of Women of Victoria include many sane as well as insane, and, moreover, only women and girls are to be treated at first, while all patients are to pay something for maintenance, the sums varying from £2 to 7*s.* 6*d.* per week, so that the proposed Australian colony cannot be intended for

the very poor. But doubtless it is intended to provide for this class in the future. It is a good thing to make a beginning and we hope that the Minister of Lands will not only "see what can be done" but will find that he can do something to meet the desire of the deputation. Of old time lunatics and epileptics were supposed to be under the special protection of the deity, in later times they were taken to be possessed by devils, and even after this notion was exploded they were treated by whipping and imprisonment. It was not until the last decade of the nineteenth century that the epileptic was reckoned as a fit subject for the care of the State. By the establishment of colonies Christian charity and social economy for once go hand-in-hand, for in such colonies the life of the epileptic is to a great extent freed from a crushing burden, his labour is made profitable, and the State is relieved from the possibility of having to support and deal with him should he degenerate both physically and mentally and become added to the large army of the criminal and degraded.

The Clinical Causes of Cancer of the Breast.

WE discussed in a leading article last week the two main theories with regard to the etiology of cancer, but there is one aspect of the problem which has hardly yet received the attention that it deserves. Environment and soil, so much talked of in connexion with all evolutionary processes, have not been closely observed in the matter of cancer. In considering the reasons for the appearance of a disease we should not be satisfied merely with finding the actual exciting cause but we should also endeavour to trace out the various conditions which permit the exciting causes to act. No living being, whether plant or animal, can survive unless the surrounding conditions—its environment—will permit it to carry on its vital processes. The soil is as necessary as the seed and when, as is often the case, the seed is very widely scattered the presence or absence of the plant in any area may depend entirely on the suitability of the soil for supporting it. The hyphomyces of ringworm will flourish on the scalp of nearly every child but in very few adults is it able to grow at all. Yet it must be very common of occurrence. The same position prevails with many other diseases. The germs on which they depend may be found everywhere, but it is only here and there that a body is found which is suitable for the growth of the germ. For the production of tuberculosis no one will now deny that the presence of the tubercle bacillus is essential. But the tubercle bacillus is almost omnipresent, at least in most large towns, so that the numbers of persons attacked by tuberculosis is incalculably smaller than those who are exposed to the bacillus. Most of us must day after day inhale the tubercle bacillus but no harmful results occur. The seed is planted but it cannot grow, for the soil is unsuitable for it. If the bacillus of tuberculosis was capable of living in any and every human body the disease would be well-nigh universal.

Whatever, then, may be the true cause of cancer, whether it be a parasitic microbe or an intracellular "influence," we must all agree that something else is needed to produce malignant disease—at any rate, upon analogy, it is overwhelmingly probable that such is the case. The other necessary conditions are, from one point of view, just as truly causes of the disease as the prime cause for which many are now seeking with tireless energy. Several investigations into these "clinical causes' of cancer have been made from time to time. WALSHE in 1846 published a volume on the nature and treatment of cancer and investigated very thoroughly the predisposing causes. A recent exposition of this aspect of the subject has been written by Mr. C. H. LEAF who has issued a small volume enumerating the conditions under which malignant disease of the breast may occur, and has tabulated his investigations so that some useful statistical conclusions may be drawn. Thus, for instance, we find that in 35 per cent. of the cases there was a definite history of injury and from this the writer concludes that trauma is a common factor in the production of cancer of the breast. There are many conditions mentioned in this volume which are suggested as of etiological importance, but the four chief "clinical causes" are given as errors of lactation, a family history of consumption, injury, and anxiety. On the whole, the writer concludes that cancer of the breast is almost invariably due to a combination of causes. We are of opinion that such an inquiry as this is work in the right direction, and similar inquiries in respect to cancer in other regions of the body might be instituted with advantage. Mr. LEAF has carried out his work with much care and thoroughness, and we appreciate fully the volume he has produced.

But our commendation and our suggestion that more work in a similar direction should be done by Mr. LEAF or others must not leave the impression that we are ignorant of the risks of the inexpert use of statistics. Few medical men ever have any training in the use of statistics—this is not a subject required for examination and therefore very few of them study it—and yet as a body the members of the medical profession have more to do with statistics than most other professions. The result is that in many articles and in many books written by medical men we find statistics used in a manner which much vitiates the conclusions drawn. We find something of this in Mr. LEAF's book. We may quote an instance. "84 per cent. were married, 16 per cent. unmarried," says Mr. LEAF, and continues, "Cancer of the breast therefore appears more than five times as frequently in the married as in the unmarried." Of course, the conclusion, if its apparent meaning is to be taken, is absolutely unwarranted by the facts presented. From the statement that 84 per cent. were married and 16 per cent. were unmarried the only valid conclusion that can be drawn is that amongst the cases on which Mr. LEAF's statistics are based there were five times as many married as unmarried women. Before we can draw any conclusions as to the relative frequency of cancer of the breast in married and unmarried women we must know the relative frequency of married and unmarried women in the general population. Moreover, the relative frequency should be known in the same district from which the patients came and from the same class of the population and between the same ages as the patients who were used for the statistics. It is obvious

that every one of these points shows a possible fallacy. The relative proportion of married and unmarried women differs enormously in different parts of the world, in different parts of the country, and in different ranks of society. When conclusions are based on statistics which take no account of these various sources of fallacy the results must be deprived of most or all of the value they might otherwise have possessed. And similar fallacies enter into many of the statistical tables on which the conclusions contained in this book are founded. Mr. LEAF's work, which has been carefully and zealously done, is not worse in this respect than many others; but it is no better. The importance of considering these "clinical causes" of cancer will probably be seen specially in prophylaxis. Even when we know the exact exciting cause of cancer, be that what it may, it is highly probable that we shall find that attention to predisposing causes will be of incalculable service for prevention.

Annotations.

"Ne quid nimis."

THE REGIUS PROFESSORSHIP OF MEDICINE AT OXFORD.

Professor William Osler has been appointed by the King Regius Professor of Medicine in the University of Oxford in succession to Sir John Burdon Sanderson who has recently resigned the post. We heartily congratulate the Crown upon their choice and no less heartily do we felicitate the University upon adding to the number of their professors so brilliant an exponent of science. It will be remembered that at a meeting of Oxford medical graduates which was held in London on Jan. 5th a resolution was passed, "that in the opinion of this meeting the Regius Professor of Medicine should be a physician who is representative of medicine in its widest sense." Everyone will allow that the new Regius professor fulfils this requirement to the uttermost. As a teacher Professor Osler has had a very wide experience, having filled the chair of medicine at McGill University, Montreal, his first *alma mater*, at the University of Pennsylvania, and at the Johns Hopkins University, the position which he now quits for Oxford. He is the author of the best text-book of medicine of the day, one which enjoys a large circulation among practitioners and students alike, and he is universally recognised as one of the foremost exponents of modern medicine. It is an open secret that there promised to be some difficulty in filling the chair vacated by Sir John Burdon Sanderson, and at the meeting of Oxford medical graduates to which we have referred it was held by resolution that the Regius professor "ought to be a man who could be accepted as the leader and representative in Oxford of the medical graduates and one to whom they would with all confidence give their loyal support." Oxford has now obtained just such a man. In Professor Osler's hands the University may be sure that the medical school will progress upon learned, practical, and dignified lines.

THE CAUSATION OF SEX.

THE problem of the causation, and of the modification, of the sex of the embryo is one that has always exercised the mind of the physician. Professor Simon Newcourt has recently analysed mathematically by the theorem of probabilities a number of statistics in order to ascertain if possible whether any light might be thrown on this question and his conclusions are recorded in the *Bulletin of the Carnegie Institute*. As a result of the inquiry Professor Newcourt draws the following tentative conclusions: 1. There is a preponderance of male over female births in all branches of the Semitic race, but this is non-existent or quite small in the negro race. 2. There are no important differences as regards capacity for producing children of one sex rather than the other which are permanent in the individual. All fathers and all mothers are equally likely to have children of either sex, except for slight variations that may be due to age. In view of the great variety of conditions on which this conclusion is based, it seems in the highest degree unlikely that there is any way by which a parent can affect the sex of his or her offspring. 3. The most natural inference from all the statistical data is that the functions of the father in generation are entirely asexual, the sex being determined wholly by the mother. If so, it cannot be said that one father is more likely than another to have children of either sex. 4. The sex is not absolutely determined at any one moment or by any one act, but is the product of a series of accidental causes, some acting in one direction and some in another, until a preponderance in one direction finally determines it. The statistics of twins and triplets seem to show very strongly that these accidents occur after conception but throw no light upon the question of the time which they occupy. 5. The firstborn child of any mother is more likely to be a male in the proportion of about 8 to 7. There is probably a smaller preponderance in the case of the second child. These conclusions are not intended by their formulator to be more than suggestive, and their lesson appears to be that in the present state of our knowledge the subject is a good one upon which to waste time.

MOTOR-CARS FOR MEN OF MODERATE MEANS.

IN the third edition of the Badminton Library volume on Motors is a chapter by Mr. Claude Johnson on Motor-cars for Men of Moderate Means, which is worth the attention of those who contemplate the purchase of a car. The writer makes an attempt to estimate the running cost of small cars, and the information is better considered and the statistics afforded are more carefully worked out than those which are usually given in current literature on motoring. Very careful records of expenditure are given by a medical man who has used a 6 h.p. belt-driven car for 3450 miles in 12 months. The up-keep, liveries, and insurances amount to £90, not including rent or wages. A member of the Scottish Automobile Club furnishes an excellent return of expenses for running 7065 miles on a 10 h.p. car, which we quote:—

Petrol	£22	12	8	=	0·77*d.* per mile.
Light and lubricant	3	5	6½	=	0·11 ,,
Repairs and new parts	12	9	11	=	0·48 ,,
Tyres	27	15	3	=	0·86 ,,
Licenses, stabling, and washing	14	10	11½	=	0·56 ,,
	£90	14	4		2·78*d.*

The figures of another Scotch member corroborate them in the cost per mile. In this case the cost works out at nearly 3*d.* per mile, 0·77*d.* representing the price of petrol, which is described as "a mere trifle in the cost of running a car." Another elaborate return for the up-keep of a 10 h.p. Lanchester car works out at a total cost of 5·7*d.* per mile, and the contributor concludes "that to keep a good car running efficiently will cost all told about £335 per annum, not including painting and varnishing." The excess of this estimate over the others referred to is due partly to an obvious extravagance in the appearance of the turn-out, higher rent, and partly to the long distance travelled (16,000 miles) which entails a disproportionate destruction of tyres; moreover, a 10 h.p. Lanchester is a fast car for its size. The cost for tyres is very interesting. An estimate has been made of their cost for 10,000 miles in the case of a 5 h.p.

voiturette, a 10 h.p. car, and a 15 h.p. car. The estimates given are roughly £21, £80, and £95, whereas the consumption of petrol in each case is £21, £24, and £36. It is found that the cost of tyres and lubricants rises in an almost geometrical ratio with the size and weight of car, while the editor of the volume adds a note to say that in his opinion the estimates for tyres quoted above should be doubled. We must remember, however, that pneumatic tyres are very variable things; no maker can turn them out with absolute precision of quality, even with the best intention. Unquestionably this chapter now added to the Badminton volume has for the motorist of moderate means much increased the value of the book.

BULLET WOUNDS AND JAPANESE BULLETS.

THE first study direct from the seat of war has appeared in the *Russki Vratch*. It is by Dr. Seldovitchou, a surgeon and senior officer in the tenth Field Reserve Hospital, which is located in Tielin. He devotes this study to the wounds from Japanese arms in respect to the first 150 wounded that came in, chiefly from the battle of Vafangow. These wounded arrived by train on June 17th, the battle having taken place on June 15th. Before they were taken up by the train many of them walked from 20 to 30 versts, afterwards making a journey of 300 versts on the railway. Nevertheless, all the wounded arrived in a very satisfactory condition generally. They bore themselves bravely and nearly all thought themselves but slightly wounded, although in numerous cases they had been pierced through and through in dangerous parts. For example, one private of the 3rd Eastern Siberian Regiment had a bullet wound through the thorax. He walked to the nearest station, a distance of over 20 versts, and felt pretty well, suffering only from a slight difficulty in breathing. With a similar wound a corporal of the 36th Eastern Siberian Rifles began his journey to the nearest station on a two-wheeled *drouhki*. This only made him feel worse and he preferred to walk some 30 versts. Dr. Seldovitchou explains this non-stopping quality of the bullets by their small calibre. The Japanese modern bullets easily pass through the intercostal interstices and by reason of their great speed will penetrate a bone and make a canal corresponding to their calibre without destroying the bone. They make holes in the skin of about the diameter of a pen. Further, these wounds do not generally suppurate. Of the 150 cases considered by Dr. Seldovitchou the only bullet wounds that did suppurate were in situations that are naturally septic. The surgeon's skill thus becomes less and less called for, the chief consideration being the maintenance of cleanliness in the wound and the application of antiseptic bandaging. Dr. Seldovitchou only had recourse to surgical operations for the extraction of bullets in five cases.

TREATMENT OF WARTS BY ADMINISTRATION OF MAGNESIUM SULPHATE.

THE treatment of warts by administration of magnesium sulphate, originally suggested by Colrat of Lyons, is generally regarded as of doubtful value. In the *British Journal of Dermatology* for July Dr. Arthur J. Hall has recorded the following case in which the benefit obtained was striking. A man, aged 27 years, had had for two years extensive warts on the scalp and forehead. The top of the head was thickly covered. The application of salicylic acid and ether produced little effect. In consequence of the great number of warts and the necessarily tedious process of destroying them separately Dr. Hall suggested, but with some scepticism, the administration of magnesium sulphate. On March 26th the patient began to take one drachm of magnesium sulphate and 15 grains of magnesium carbonate in mixture thrice daily. On March 30th the warts had shrunk considerably. The mixture was acting somewhat drastically so it was taken less frequently. On April 13th not one wart was left. Cases of the sudden disappearance of warts under the administration of a variety of substances—magnesium sulphate, nitro-hydrochloric acid, liquor arsenicalis, thyroid extract, and tuberculin—have been recorded. It is generally admitted that multiple warts in young adults are infectious. They are therefore probably due to a parasite. Dr. Hall thinks that the disappearance of the warts in the circumstances mentioned points to the parasite being a feeble one the growth of which is prevented by these various drugs, just as the growth of actinomycetes in the tissues is prevented by iodide of potassium.

WHO OWNS THE INSANITARY HOUSES?

THERE are a good many insanitary houses in Salford, as elsewhere, and at a recent meeting of the Salford Town Council one of the members wished that a black list of their owners could be published. The publicity thus obtained would probably cause the property to be put into a more sanitary condition quite as readily as the threat of penalties. It is depressing to learn, as we do from a local correspondent, that the defaulting owners included some of the best known men and women in the borough and members of Christian churches. No doubt it often happens that the insanitary condition of property arises from trusting everything to agents, but though this may explain it does not excuse a deplorable state of affairs.

AN EXPERIMENT IN PRISON REFORM.

THE current number of the *Sunday at Home* contains a very interesting article by Miss Charlotte Smith-Rossie, who is lecturer to the Hants county council. In January, 1903, she was allowed by the Governor to begin a course of fortnightly lectures on sanitary subjects to the women prisoners at Portsmouth prison. Something of the kind had previously been tried at Wormwood Scrubbs prison, but, as Miss Smith-Rossie remarks, there is a great difference between the class of prisoner in a short service local prison and that in a penal establishment. Most of the Portsmouth prisoners had arrived there on the "40*s.* or a month" system; they had not been able to pay the 40*s.* so they had to undergo the month. The subjects of the lectures were practical demonstrations in nursing, the care of children, and domestic hygiene. Miss Smith-Rossie says that when outside, women of this class are by no means attracted by lectures upon domestic or medical work and that she rarely sees any member of the prison class at her lectures given for the county council. But in a prison the monotony is such that anything is welcomed for a change and the fact that only well-behaved prisoners were allowed to attend the lectures acted as an incentive to good conduct. The lectures not being scheduled as "compulsory" no marks were allotted which Miss Smith-Rossie thinks is a pity, although quite allowing that the lectures should not be compulsory. We have no sympathy with the pampering of prisoners, but still prisons ought to be reformatory as well as penal and any person who is put in prison, not so much because she has committed an offence against the law but only because she cannot pay the fine which is the alternative purging of that offence, deserves merciful treatment. The ignorance of the poorer classes about the management of their houses and their children, about hygiene, and housekeeping is, after 35 years of compulsory education, simply astounding and anything which will tend to remove this ignorance is to be welcomed. Miss Smith-Rossie expresses a hope that such lectures will be initiated

in every local prison and we echo her wish. In one point we think that she is unduly pessimistic and that is in her expression of opinion that the convict woman is irreclaimable. No one, we believe, is hopelessly irreclaimable, unless insane. Those of our readers who can call to mind Walt Whitman's magnificent poem, "The Singer in the Prison," will know what we mean, although the poet was writing of male prisoners. It is a psychical fact that a woman criminal is far more difficult to reclaim than a man, but nothing is more likely to make a bad character confirmed in bad habits than for reclaiming agencies to plead that nothing can be done for his or her improvement. The Association of Lady Visitors has already done magnificent work in persuading convicts who have expiated their offences to desire a better life and Miss Smith-Rossie may think of Whitman's words:—

> "A soul confined by bars and bands,
> Cries, Help! O help! and wrings her hands;
> Blinded her eyes, bleeding her breast,
> Nor pardon finds, nor balm of rest.
>
> Ceaseless she paces to and fro,
> O heartsick days, O nights of woe!
> Nor hand of friend, nor loving face,
> Nor favour comes, nor word of grace.
>
> It was not I that sinned the sin,
> The ruthless body dragged me in;
> Though long I strove courageously
> The body was too much for me.
>
> Dear prison'd soul, bear up a space,
> For soon or late the certain grace ....."

The way of the released convict is by no means easy but difficult and thankless as the task of helping such may seem the word "irreclaimable" should not be found in the vocabulary of the prison reformer.

THE TEMPLE OF ASKLEPIOS IN THE ISLAND OF COS.

DR. RICHARD CATON and various writers upon antiquarian subjects have acquainted the public of the valuable results achieved a few years ago in the excavation by the Greeks of the celebrated sanctuary of Æsculapius at Epidauros, and M. Cavvadias, the official explorer of that site, in many monographs, and, finally, in a magnificent volume, has presented a complete account of his work and published all the inscriptions and relics found. The great success at Epidauros naturally suggested similar investigations at the other famous seat of medical lore and worship of the ancient Hellenic race, the Asklepeion, or temple of Asklepios, in the island of Cos. Six years ago a German archæologist, Herr Herzog, visited Cos for the purpose, if possible, of ascertaining the situation of the shrine but did not succeed in detecting its position. He, however, made a valuable preliminary survey. In 1900 he again returned to Cos on a mission from the Prussian Academy and the German Archæological Institute. His chief attention this time was given to examining the stones out of which the citadel of Cos, built in the fifteenth century by the Knight Hospitallers, was constructed, for they consist chiefly of the remains of ancient edifices, statue bases, and monumental stelæ, many bearing Greek and Latin epigraphical texts. For Herr Herzog they furnished 20 new and 50 partly known inscriptions but neither these nor others he discovered elsewhere gave him the desired clue to the Asklepeion. In 1902 the indefatigable observer returned once more, accompanied by an architect and a naturalist, Herr Hecht and Herr Vosseler, and commenced excavations in a temple of Demeter at Isthmos and then at an edifice dedicated to Apollo at Halasarna. Still these were not the Asklepeion. The corpus of the inscriptions of Cos had been edited by a British student, Mr. Paton, and in his commentary upon them he had called particular attention to the remains of a magnificent temple near the present village of Kermete. The land had once belonged to the convent of St. John, at Patmos, and in ancient manuscripts relating to that convent the site was called τὸ ἄλσος. Now Mr. Paton noticed ἄλσος was the name of woods which were sacred to Asklepios and suggested to the German searchers to try this site efficiently. The practical Englishman proved more prescient than the erudite Germans, for preliminary explorations speedily proved that the Asklepeion of Cos had been discovered. The great temple stood upon the side of a hill, 100 metres above the blue Ægean Sea, upon a platform from which can be seen Samos to the north, Calymoros to the west, and the Asiatic coast from Mycale to Halicarnassus. The whole of the edifice above ground was of white marble. The foundation of a long base was found which probably supported a pair of statues of Asklepios and Hygeia. Two other temples and a grand altar have been found close to the grand temple. This altar is certainly the one upon which two of the characters in a recently recovered poem of Herondas admired the statues of Asklepios and Hygeia by the son of Praxiteles. The great temple was built in the second century B.C. but its inscriptions range to the third century A.D. Among these texts one refers to a request from Gortyna, in Crete, to send them a medical man. Cos despatched one Hermias who bestowed such care on many Gortynians wounded in a campaign that he merited the honour of a grateful inscription. The school of medicine at Cos was evidently a place from which physicians were obtained. In 1903 Herr Herzog returned to Cos and has made many more discoveries, among others a head of Asklepios and numerous inscriptions. When these are all carefully edited we shall have as complete a record of the great medical college of Hippocrates as we have of the rival school at Epidauros.

COPPER IN PRESERVED PEAS AND BEANS.

FINES of £2 with £2 2*s*. costs and £1 with 2*s*. costs were inflicted by Mr. Marsham at Bow-street Police-court this week upon a wholesale grocer for selling preserved peas which contained 3·402 grains of sulphate of copper per pound and beans which contained 4·067 grains per pound. Medical evidence was given by Mr. A. D. Cowburn, acting medical officer for Holborn, who explained the cumulative effect of repeated doses of sulphate of copper and pointed out that though it might be administered medicinally the maximum dose in such a case would be considerably less than that contained in a pound of peas or beans as sold by the defendant. When only a small amount of copper was used it entered into combination with the chlorophyll forming phyllocyanate of copper. There was no direct evidence that phyllocyanate of copper in minute quantities was injurious to health, although dogs fed on this substance became paralysed, which paralysis ultimately caused death. When copper was used in such large quantities, however, as those stated in the analyst's report the copper entered into combination with the pith or substance of the pea or bean, forming leguminate of copper. He had ascertained from the analyst that leguminate of copper was present in both the articles in respect of which proceedings had been taken. There was a difference of opinion as to whether leguminate of copper was or was not acted upon by the gastric and pancreatic juices. When people, as they frequently did, used butter in cooking peas preserved with copper, complex organic compounds, one of which was oleate of copper, were formed, in which case a much larger quantity of copper was absorbed into the body. That had been proved by experiments carried out for the purposes of the Departmental Committee on Food Preservatives. The defence raised a point of law on the form of the certificate, while otherwise it was to the effect that the defendant had for many years sold similar goods to those on account of which he was prosecuted. The tin of beans had

had on it a label intimating that it contained sulphate of copper, and the tin of peas had, it was stated, borne a similar inscription which had fallen off. Questions were put to Mr. Cowburn in cross-examination with a view of showing that sulphate of copper, being used medicinally, was therefore harmless, or even beneficial, in vegetables. It is to be hoped that when this last point is raised, where chemical substances have been introduced into foods as colouring matter or as preservatives, magistrates will remember that when poisonous drugs are employed as medicines they are prescribed for particular purposes by qualified medical practitioners and that the prescriptions are then made up by competent and responsible druggists. The addition of such drugs to foodstuffs in order to attract customers is upon a different footing, if only because there is no proof that trustworthy steps have been taken to secure the proper proportion of the dangerous substance, and no more, appearing in a given quantity of the article sold.

CHANGES IN THE BLOOD IN MENTAL DISEASE.

A VALUABLE paper on the subject of the leucocytic changes in the blood in various forms of mental disease is contributed to the *Journal of Mental Science* for July by Dr. Lewis C. Bruce, medical superintendent of the Perth District Asylum, and Dr. A. S. M. Peebles, assistant physician. A systematic examination was made of the blood of 150 patients admitted to the asylum during the past three years. Each patient's blood was examined on several (three or more) occasions, often for weeks or months at a time, during the varying course of illness. As regards technique Cole's system of counting "fields" was employed in the blood examinations to determine the frequency of the leucocytes. The Thoma-Zeiss hæmocytometer was employed and no less than 30 fields, and frequently more, were counted at each enumeration when accuracy was desired. The specimens were coloured with Louis Jenner's stain. In the differential countings the following five varieties of leucocytes were recognised—viz., polymorphonuclear leucocytes, small and large lymphocytes, eosinophile leucocytes, and mast cells. For purposes of comparison numerous control counts were also made from the blood of members of the asylum staff. In these control cases the leucocytes were found to be from 6000 to 9000 per cubic millimetre of blood in young healthy males and from 6000 to 13,000 in females. The average percentages of the different kinds of cells were as follows: polymorphonuclear cells 70 per cent., small lymphocytes 20 per cent., large lymphocytes 8 per cent., and eosinophile cells 1·5 per cent. in the males, the corresponding figures for females being 60, 30, 7·5, and 2 per cent. Mast cells, says Dr. Bruce, occasionally occurred and a percentage of from ½ to 1 was met with in the control specimens of blood. The following were the general results obtained in this investigation, the details in each of the individual cases of disease conforming in general to the average results obtained for each class. In cases of pure acute melancholia leucocytosis was never observed to be present. The leucocytes varied from 7000 to 13,000 per cubic millimetre, the polymorphonuclear cells from 55 to 70 per cent., the small lymphocytes from 30 to 40 per cent., and the large lymphocytes from 5 to 10 per cent. The eosinophile cells never exceeded 1 per cent. and in a few cases an occasional mast cell was seen. A useful practical inference is drawn here. In examining an early case of melancholia which has not yet fully developed, says Dr. Bruce, "the prognosis should be guarded if hyperleucocytosis is present and especially if the polymorphonuclear percentage is above 70. On the other hand, if the leucocytosis is below 10,000 the prognosis is good for the melancholia." In cases of excited melancholia examination showed a high leucocytosis early in the disease, and coinciding with this the percentage of polymorphonuclear cells was frequently above 70. Later in the disease during relapses and recurrences a high leucocytosis (20,000 to 30,000 per cubic millimetre) and a high polynuclear cell percentage (80 per cent.) frequently prevailed. Before the onset of the relapse both percentages were low, the rising numbers of leucocytes and polymorphonuclear cells being associated with the exacerbation of the illness. Cases of mental excitement which on further examination turned out to be "*folie circulaire*" often might, adds Dr. Bruce, be mistaken for simple acute mania. All such cases when examined showed depression or excitement of the simple melancholic or maniacal type. During the stage of depression all these cases exhibited a high leucocytosis with a polymorphonuclear percentage of from 60 to 70. When apparent recovery followed the leucocytosis still remained high, and when excitement set in the leucocytosis gradually increased, reaching its height at the acme of the mental disturbance and then gradually falling to a lower level. The depression and excitement of cases of "*folie circulaire*" are quite different from ordinary attacks of mania and melancholia. The leucocytosis of acute continuous mania and of recurrent mania in adolescents exactly resembles that of excited melancholia and a notable feature in all three conditions was its persistency. Leucocytosis remained for months, and even in some cases for years, after the patient's recovery and discharge from the asylum. In cases of recurrent mania (not including alcoholism) the leucocytosis rose high during the attack and fell slightly afterwards but rarely reached the normal. The polymorphonuclear percentages followed the curve of leucocytosis. Between the excitement periods of recurrent mania the large lymphocytes and hyaline cells of the blood were much increased, often reaching 20 per cent. In alcoholic acute mania the blood changes were identical with those of non-alcoholic acute continuous mania, which suggested to the authors of the investigation that "alcohol was an exciting cause, breaking down the resistive power of a patient predisposed by heredity to the infection which occurred in melancholia." Chronic alcoholic cases (delusional type) never exhibited any leucocytosis. All cases of paranoia and of delusional insanity occurring in later life were entirely free from hyperleucocytosis. In classical cases of general paralysis there were hyperleucocytosis and a high polynuclear percentage at the onset, with marked remission of symptoms if the leucocytosis had been very high during the attack. During the second stage of general paralysis the leucocytosis followed the course of the disease, febrile attacks being heralded by rise of the percentage of both polymorphonuclear cells and small lymphocytes. Transient eosinophiles were observed quite commonly during this stage. In epileptic insanity hyperleucocytosis was invariably present during the seizures and in the intervals, the most marked increase of cells following a series of fits (status epilepticus). No cells exhibiting any evidences of phagocytosis were ever found in any of the cases of insanity examined.

THE MEMORIAL TO SIR THOMAS BROWNE.

IN THE LANCET of May 27th, 1899, we published a letter from Sir Peter Eade, the chairman of a committee appointed to organise the raising of a statue to be erected in Norwich to Sir Thomas Browne. As will be seen by a letter which appears in another column from Mr. F. R. Eaton, the honorary secretary of the fund, the preliminary arrangements for the statue are now complete and Mr. Henry Pegram has been commissioned to carry out the work. Sir Thomas Browne was one of the most famous citizens of Norwich, which he made his home, although he was not, strictly speaking, a native of the eastern

capital. He was born in London and received his medical education in Winchester, but his name and fame are so intimately connected with Norwich that it is but fitting that his memorial should be erected there. No words from us are necessary in praise of a man whose writings are known throughout the English-speaking world, and the "Religio Medici" and still more his treatise on Urn Burial will remain as a possession for ever to all who can admire writing of a style which is at once philosophical, musical, and endued with that spirit of quietism which throughout the troublous times of the seventeenth century distinguished such men as Browne, Henry Vaughan, and George Herbert. The site suggested for the statue is in the Haymarket, near the house in which Browne resided for many years and the church of S. Peter Mancroft in which he was buried.

CHRONIC INTERSTITIAL NEPHRITIS IN THE YOUNG.

CHRONIC interstitial nephritis is very rare in the young. Ashby and Wright, in their text-book on "Diseases of Children," state that five cases have come under their observation—three cases in girls (aged respectively 11, ten, and seven years) and two cases in boys (aged respectively five and two years). In all the cases the diagnosis was verified by a necropsy. In the *American Journal of the Medical Sciences* for June Professor J. L. Hirsh has reported two cases, both associated with changes in the blood-vessels though of an entirely different nature. In the first case a boy, aged 15 years, was taken to hospital for uncontrollable bleeding from the gums following the extraction of a tooth on the previous day. He had been a robust child and had had measles at the age of six and varicella at the age of eight years. About a year before admission he began to complain of feeling tired after slight exertion, his appetite began to fail, and his sleep became restless. He got up at night to micturate. Of late he had had headache at irregular intervals. He had never suffered from hæmorrhage previously and there were no bleeders in his family. On admission he was pale, the mucous membranes were almost colourless, and he complained of dyspnœa. There was visible pulsation of the carotids. A slight râle was occasionally heard at the bases of the lungs. The apex beat was prominent and in the fifth space just outside the nipple line. The area of cardiac dulness was increased both towards the right and the left. There was a soft apical systolic murmur and the second aortic sound was accentuated. The radial pulse was full, of moderate tension, and, though compressible, was obliterated with some difficulty. The liver extended a finger's breadth below the costal margin. The urine was increased in quantity, pale, and of specific gravity 1012. It contained a little albumin and a few hyaline casts and an occasional granular cast. At times albumin was absent. Continuous pressure stopped the hæmorrhage in a few hours. After resting in bed for a few days his condition seemed to improve but after he had been up for a week œdema of the ankles was observed. The dyspnœa increased and he died five weeks after admission. At the necropsy about 200 cubic centimetres of serous fluid were found in each pleural cavity. The lungs were congested and œdematous. The heart was enlarged, principally from hypertrophy of the left ventricle, which was two centimetres in thickness. The left kidney weighed only 68 grammes and the right 80 grammes. Both were granular. The aorta was atheromatous and showed calcareous plates and spots of fatty degeneration. Microscopic examination of the kidneys revealed great increase of connective tissue, destruction of glomeruli, and degeneration of the tubes. In the second case a girl, aged 18 years, was admitted to hospital on July 12th, 1903, complaining of frequency of, and loss of control over, micturition. The symptoms began two years before. She was anæmic and her development corresponded to that of a girl aged 14 years. Moist râles were heard over both lungs. The cardiac dulness was increased and the apex beat was one centimetre outside the nipple line. The aortic second sound was accentuated. The urine was increased in quantity, pale, and of specific gravity 1010. It contained a few hyaline casts and a little albumin. The lower limbs were œdematous. On July 25th she began to complain of headache and became dull and two days later comatose. She died on the 28th. The necropsy showed an enlarged heart. The kidneys were very small and granular. The aorta was abnormally small and admitted the little finger with difficulty. A relation between congenital narrowness of the aorta and primary atrophy of kidney has been described by Lanceraux and others. The etiology of granular kidney in the young is obscure. It has been described as congenital and congenital syphilis has been supposed to play an important rôle in its production. Heredity seems to be a factor, as in the remarkable case cited by Dr. Howship Dickinson in which Bright's disease appeared in four generations.

THE ALCOHOL HABIT AND THE AUTOMATIC MACHINE.

NOT long ago considerable publicity was given to the fact that certain sweets contained a decided quantity of alcohol, but this is not the only surreptitious way of imbibing the spirit, as would appear from a method of which a correspondent informs us he has been recently an eye-witness. It is well known that strong spirit is an indispensable solvent for essential oils in the preparation of perfumes. Their alcoholic strength, of course, varies, but we should be well within the mark we think if we suggest that, generally speaking, perfumes are stronger than brandy. Such is the depraved state of human nature even in its early stages that the automatic penny-in-the-slot machine has been found by small boys to be a source of free "nips." There are automatic machines designed for supplying a sprinkling of scent for the handkerchief for the sum of one penny. A handkerchief is placed upon a metal cup above which is a delivery tube or spout. On putting a penny in the slot a small quantity of perfume is discharged from the spout and scattered on the handkerchief. Certain ingenious little urchins, it appears, have not been long in discovering that what costs the customer the sum of one penny for the luxury of having a handkerchief scented may be obtained free by applying a partial vacuum at the end of the spout, otherwise by the eminently simple means of sucking. The fact that sucking anything, nice or nasty, wholesome or insanitary, is a perfectly natural habit in the young would discount any claim on the part of these wicked boys to a particularly original design. The spout was clearly meant to deliver something and it was but an instinctive thought to see if something could be got out of it. The experiment was a success and we need hardly dwell upon the evil possibilities of the urchins' discovery. We trust, and do not doubt, that the companies who own these machines will take preventive steps.

THE medical officer of health of the Cape Colony reports that the state of the colony for the week ending July 23rd as regards plague was as follows. At Port Elizabeth three cases of plague were discovered during the week; 202 rats and 171 mice were bacteriologically examined during the week, and of these 12 rats and nine mice proved to be infected with plague. At East London the carcass of a rat discovered on July 21st was considered on microscopical examination to be probably plague-infected and inoculation

experiments are being carried out to test this view. In the Harbour Board area and the Cape Town municipal area 553 rodents were examined but none was found to be plague-infected.

THE King of Greece has conferred the Gold Cross of the Royal Order of the Saviour upon Sir William Bennett, K.C.V.O., F.R.C.S.

THE REPORT OF THE PRIVY COUNCIL UPON PHYSICAL DETERIORATION.

(*Continued from p. 392.*)

HAVING discussed in the earlier portion of its report the value of the evidence presented by the War Office, and having satisfied itself of the failure of the data officially relied on to prove general physical deterioration, the committee comments with justice, and evidently with surprise, on the absence of any criteria, statistical or otherwise, by which a comparative estimate of the health and physique of the community may be arrived at. Accordingly, in compliance with the terms of its reference, the committee addressed itself at an early date to the task of supplying this pressing want for future use. It has accordingly devised a plan by means of which information as to certain broad facts regarding measurement, health, and physique may in course of time become available for State purposes. In order that this plan should bear the stamp of scientific authority the committee invited the assistance and counsel of the English Royal Colleges of Physicians and Surgeons, as well as that of the leading anatomists, anthropologists, and other scientific men whose advice was likely to prove useful. The labours of the committee in this direction have resulted in as cheme which is fully set forth in the report and to this we shall recur later.

In commenting on the evidence of many competent witnesses the committee refers to the practically unanimous testimony received as to the improving conditions under which the denizens of our large towns are now called upon to exist. Rookeries are being dispersed, inclosed yards opened out, cellar dwellings and back-to-back houses are disappearing, and, speaking generally, daylight and fresh air are being admitted into slum property from which the avarice of the land-grabber and the jerrybuilder had excluded both these essentials of healthy life. Concurrently with an increase of wages a fall in the price of most of the necessaries of life has taken place, more than counterbalancing the rise of rent which in itself is largely due to the higher wages now paid in the building trades. In this connexion the valuable evidence of Mr. C. S. Loch, Secretary of the Charity Organisation Society, is especially referred to. He furnished the committee with reasons for believing that improved resources have been accompanied by an upward movement in social ability and competence, with the result that a certain amount of advantageous expenditure has gone in better dwelling-places and in the purchase of better and more plentiful food. From other witnesses, too, the committee learns that in various directions the conditions of life among the labouring classes have been improved. For example, a better and more abundant water-supply has been in many cases secured, the housing of the working classes has been the subject of legislative concern, pauperism, especially among the young, has diminished, better and more complete hospital accommodation has been provided for the sick poor, the conditions of labour touching young persons and women in factories and workshops have been greatly ameliorated, and all the "children of the State" in workhouses, schools, reformatories, and industrial institutions are started in life under more fortunate auspices than formerly. In short, the mass of evidence which the committee has received is practically conclusive as to the non-existence of any general or progressive deterioration either in the physique or in the health of the British nation. On this point we may quote from the report the deliberate judgment of the committee: "*It may be as well to state at once that the impressions gathered from the great majority of the witnesses examined do not support the belief that there is any general progressive physical deterioration.*"

The first volume of the evidence on which this important judgment is founded was published last week, and from such a perusal of it as has been practicable in a few days we believe that our readers will agree with the verdict which, after long and painstaking inquiry, the committee has pronounced. There is, however, on the other hand, a dark side to this picture, and this the committee has not failed to recognise and to deplore. Without question there still exists in London as well as in other large British towns a considerable aggregate of slum population, ill-nourished, disheartened, poor, ignorant, badly housed, miserably clad, and, indeed, hardly amenable to social improvement. In the absence of trustworthy data the committee expresses no opinion as to their number, but it speaks of these slum dwellers as the "degenerates." These are the luckless denizens of our large towns and the prominent notice now directed to the physical condition and environment of the lower classes is responsible for the notoriety they now enjoy. Physical infirmity is practically limited to the poorest and lowest strata of the population, whose children are improperly fed and inadequately lodged, and in which the parents of both sexes are idle, improvident, and intemperate. With reference to these wretched persons the committee observes that in large classes of the community there has not been developed a desire for improvement commensurate with the opportunities offered to them. Laziness, want of thrift, ignorance of household management, and particularly of the choice and preparation of food, on the one hand, and, on the other, filthiness, indifference to parental obligations, and drunkenness largely affect adults of both sexes and press with terrible severity upon their offspring. "The people perish for lack of knowledge." Local authorities, moreover, especially in country districts, are often reluctant to exercise their powers, and in these circumstances sanitary progress, lacking the stimulus of a healthy public conscience, is tardy and uncertain.

Foremost among the many causes in operation that are calculated to arrest and depress development is the massing of the population in great towns—the "urbanisation of the people." The recent census returns tell us that the urban portion of the population of England and Wales now equals nearly four-fifths of the whole, whereas 50 years ago it was little more than half; and further, that for every person who in the year 1851 lived in a town about three persons are town dwellers at the present time. It must, however, be borne in mind that the meaning of the term "urban" is frequently misunderstood; the term does not mean more than that the area to which it applies has, for purposes of local government, an urban organisation. As a matter of fact, a large portion of the dwellers in so-called urban districts are now living under conditions as healthful as any that obtain in rural districts. Owing to the greater completeness of sanitary legislation and the higher conception of duty that governs their administration these urban areas enjoy advantages that are denied to the rural, and it is a fact that towns have at the present day a death-rate which compares favourably with that of country districts half a century ago.

Prominent among the results of urbanisation stands overcrowding, with its attendant evils of uncleanliness, foul air, and bad sanitation. Overcrowding, says Mr. Charles Booth, is the great cause of degeneracy. Drink is fostered by bad houses. Crowded homes send men to the public-house and are the main cause of drink and vice. Unfortunately, the permanent difficulty in the way of improvement lies in the character of the people themselves—their feebleness and indifference, their reluctance to move, and their incapability of moving. These are the real obstacles that beset even well-disposed local authorities in their endeavours to ameliorate the conditions of life in our great towns. The evils of overcrowding are of course most obvious in tenements consisting of only one room, the overcrowding there being among persons usually of the lowest type, steeped in every kind of degradation, and cynically indifferent alike to the vile surroundings engendered by their filthy habits and to the moral pollution of the young brought up in such an atmosphere. In Glasgow the general death-rate in single-roomed tenements is just twice that of the whole city, whilst the mortality from pulmonary tuberculosis is more than three times the average obtaining in other houses. In Finsbury, again, where, according to the recent census, no less than 15,000 people live in single-roomed tenements, the death-rate at all ages was 39 per 1000 living, notwithstanding that in

the same borough the rate among occupants of four-, or more, roomed tenements was less than 6 per 1000. In seven groups of districts in the administrative county of London the mortality among infants closely follows the degree of overcrowding. In other words, in districts where the proportion of single-roomed tenements does not exceed 10 per cent. of the whole the infantile death-rate is 146 per 1000, but as the proportion of the people living in overcrowded tenements increases so does also the infantile death-rate, ranging from 180 per 1000 in some districts through 196 and 210 per 1000 and culminating in the most crowded districts in a rate of 223. We thus see that in the districts last mentioned out of every four children born one dies before reaching its first birthday, and with all due respect for the War Office authorities we would remark that this fact is of far greater national importance than is the other fact that three out of five slum-dwellers recruited for the army are eventually found unfit to remain with the colours.

In so far as the evils of overcrowding depend upon structural defects of slum property the committee holds that they are gradually removeable by the firm application of existing statutory powers. The fact, however, is established by the evidence of many witnesses that much of the insanitary property is in the hands of persons who, as members of the sanitary authority, are called upon to put the law in operation. Recognising the paralysing effect of this circumstance the committee approves of the suggestions of Colonel Lamb of the Salvation Army to the effect that in all cases involving the amelioration of slum property justice should be administered not as at present but by a stipendiary magistrate. With regard to the incorrigibles, the habitual vagrants and so-called "won't works," the committee thinks that the system of "labour colonies" as now carried out by the Salvation Army at Hadleigh might be worthy of a fair trial. The committee paid a visit to this colony and was much impressed with the order and excellent management which pervaded every branch of its administration and by the opportunity the system there in operation on a large scale appears to offer for the reclamation of the waste elements of society. Having regard to the desirability of preserving the young from contaminating influences it might be possible to apply similar treatment to the children of all parents who have proved unfit to discharge their obligations to those whom they bring into the world. With a view to the enforcement of parental responsibility the object would be to make the parent the debtor to society on account of his child, with the further liability in default of payment for suitable maintenance of being placed in a labour colony under State supervision until the debt is discharged. It is not believed that such extreme measures would be necessary in a large number of cases; the fact that a few defaulters had been so treated and that the State had the necessary power would exercise a salutary effect and might be expected to prove to the young a charter of immunity from the worst of the evils by which they are at present oppressed. According to the evidence, the Staffordshire Potteries appear to suffer exceptionally from the neglect of local authorities to deal with glaring offences against sanitary law. Thus one witness said, "I should think that the local authorities in the Potteries were as inefficient as you could find anywhere." Most of the bad houses are owned by members of the local bodies and the sanitary inspectors are too much in awe of their employers to carry out their duty. For this state of affairs the remedy is obvious and is one which the committee approves. It consists in applying to the chief administrative officer of each local authority the principle carried out in London to the benefit of all concerned—namely, that of granting to the medical officer of health secure tenure of office provided that he satisfies the Local Government Board as to the manner in which his duties are performed and that he devotes his whole time to sanitary work.

Among other alleged causes of physical deterioration associated with aggregation of the people in towns is the withdrawal from the rural districts of the best and choicest of the population, leaving weaker and inferior types to continue the stock. This evil is sometimes aggravated by the drifting into the country of the debilitated town population which is crowded out by the inrush of more vigorous elements. Evidence given before the Scotch Royal Commission on Training suggests that the physique of the population of the home counties had suffered by the outflow of debilitated types from the metropolitan area. Moreover, Mr. Tweedy, the President of the Royal College of Surgeons of England, in the course of his remarks on the migration of the stronger types into the towns, expressed the opinion that a reverse process was going on; that there is a current of the better and more adventurous people into the towns and also a similar reverse current of the feebler and less fit who are driven back again to the land, the rural districts thus becoming at once the recruiting ground and the asylum of the towns. This aspect of the question has especial interest for Ireland. The witnesses from that country were emphatic in ascribing to emigration fatal effects upon the physique of the people by withdrawal of the strongest and best types, thus leaving it to the weakest types to reproduce their kind and carry on the race. The sound and the healthy—the young men and young women—from the rural districts emigrate to America and other lands in great numbers and, as a rule, it is only the more enterprising and more active that go. By the combined operation of these causes the flower of the rural population is depleted and an undue proportion of weaklings constitutes the stock from which the population of Ireland is recruited. The committee proceeds to consider the alleged tendency of the superior stocks in all classes of the people towards a diminished rate of reproduction as one of the possible causes of physical deterioration. So far as this allegation is based upon a diminishing birth-rate—a fact general throughout Western Europe—there appear, in the committee's judgment, to be certain compensatory considerations. Among the factors in the reduced birth-rate in England are: (1) the raising of the ages at which marriages are contracted; and (2) a diminution in the number of illegitimate births. Both these circumstances are believed by the committee to tend to the improvement rather than to the deterioration of the race.

(To be concluded.)

METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are the awards recommended by the committee of distribution for the year 1904:—

GENERAL HOSPITALS.

Charing Cross Hospital, £987 1*s.* 8*d.*; French Hospital, £325 16*s.* 8*d.*; German Hospital, £565 8*s.* 4*d.*; Great Northern Central Hospital, £1030 4*s.* 2*d.*; Guy's Hospital, £2041 5*s.*; Hampstead General Hospital, £204 2*s.* 6*d.*; Italian Hospital, £182 1*s.* 8*d.*; King's College Hospital, £1458 11*s.* 8*d.*; London Hospital, £4992 18*s.* 4*d.*; London Homœopathic Hospital, £533 15*s.* 10*d.*; Phillip's Memorial Homœopathic Hospital, £23 19*s.* 2*d.*; London Temperance Hospital, £798 11*s.* 8*d.*; Metropolitan Hospital, £902 15*s.*; Mildmay Hospital, £282 14*s.* 2*d.*; Miller Hospital and Royal Kent Dispensary, £256 16*s.* 8*d.*; North-West London Hospital, £508 0*s.* 10*d.*; Poplar Hospital, £661 5*s.* 0*d.*; Queen's Jubilee Hospital, £153 6*s.* 8*d.*; Royal Free Hospital, £1341 13*s.* 4*d.*; St. George's Hospital, £1620 3*s.* 4*d.*; SS. John and Elizabeth Hospital, £327 15*s.*; St. Mary's Hospital, £2395 16*s.* 8*d.*; Seamen's Hospital Society, £1386 14*s.* 2*d.*; Middlesex Hospital and Convalescent Home, £2501 5*s.*; Tottenham Hospital, £445 12*s.* 6*d.*; University College Hospital, £1760 9*s.* 2*d.*; Walthamstow, &c., Hospital, £105 8*s.* 4*d.*; West Ham Hospital, £531 17*s.* 6*d.*; West London Hospital, £1015 16*s.* 8*d.*; Westminster Hospital, £1533 6*s.* 8*d.*; and St. John's Hospital, Lewisham, £191 13*s.* 4*d.*

CHEST HOSPITALS.

City of London Hospital for Diseases of the Chest, Victoria Park, £929 11*s.* 8*d.*; Hospital for Consumption, Brompton, £1820 16*s.* 8*d.*; Mount Vernon Consumption Hospital, Hampstead, £766 13*s.* 4*d.*; Royal Hospital for Diseases of the Chest, City-road, £431 5*s.*; and Royal National Hospital for Consumption, Ventnor, £335 8*s.* 4*d.*

CHILDREN'S HOSPITALS.

Alexandra Hospital for Hip Disease, W.C., £297 1*s.* 8*d.*; Banstead Surgical Home, £23 19*s.* 2*d.*; Barnet Home Hospital, £43 2*s.* 6*d.*; Belgrave Hospital for Children, S.W., £76 13*s.* 4*d.*; Cheyne Hospital for Incurable Children, S.W., £138 19*s.* 2*d.*; East London Hospital for Children, Shadwell, E., £805; Evelina Hospital for Sick Children, Southwark, S.E., £95 16*s.* 8*d.*; Home for Incurable Children, Maidavale, W., £71 17*s.* 6*d.*; Home for Sick Children, Sydenham, S.E., £129 7*s.* 6*d.*; Hospital for Sick Children, Great Ormond-street, W.C., £1102 1*s.* 8*d.*; Kensington, for Children, and Dispensary, £81 9*s.* 2*d.*; North-Eastern Hospital for Children, Hackney-road, N.E., £431 5*s.*; Paddington-green Hospital for Children, W., £306 13*s.* 4*d.*; St. Mary's Hospital, Plaistow, E., £258 15*s.*; St. Monica's Hospital, Brondesbury, N.W., £67 1*s.* 8*d.*; Victoria Hospital for Children, King's-road, Chelsea, S.W., £527 1*s.* 8*d.*; Victoria Home, Margate, £40 5*s.*; and Hospital for Hip Disease, Sevenoaks, £43 2*s.* 6*d.*

LYING-IN HOSPITALS.

British Lying-in Hospital, Endell-street, W.C., £43 2*s.* 6*d.*; City of London Lying-in Hospital, City-road, E.C., £100; Clapham Maternity Hospital, £19 5*s.* 4*d.*; East End Mothers' Home, £67 1*s.* 8*d.*; General Lying-in Hospital, Lambeth, S.E., £59 8*s.* 4*d.*; and Queen Charlotte's Lying-in Hospital, Marylebone-road, W., £450 8*s.* 4*d.*

HOSPITALS FOR WOMEN.

Chelsea Hospital for Women, S.W., £273 2s. 6d.; Hospital for Women, Soho-square, W., £327 15s.; Grosvenor Hospital for Women and Children, Vincent-square, S.W., £143 15s.; New Hospital for Women, Euston-road, W.C., £287 10s.; Royal Waterloo Hospital for Children and Women, Lambeth, S.E., £191 13s. 4d.; and Samaritan Free Hospital, Marylebone-road, W., £335 8s. 4d.

OTHER SPECIAL HOSPITALS.

Cancer Hospital, Brompton, S.W., £445 12s. 6d.; Middlesex Hospital, Cancer Wing, £288 6s. 8d.; London Fever Hospital, Islington, N., £596 19s. 2d.; Gordon Hospital for Fistula, Vauxhall Bridge-road, S.W., £17 5s.; St. Mark's Hospital for Fistula, City-road, E.C., £191 13s. 4d.; National Hospital for the Diseases of the Heart, Soho-square, W., £131 5s. 10d.; Female Lock Hospital, Harrow-road, W., £206 0s. 10d.; Hospital for Epilepsy, Paralysis, and other Diseases of the Nervous System, Regent's Park, N.W., £53 13s. 4d.; National Hospital for the Paralysed and Epileptic, W.C., £1159 11s. 8d.; West End Hospital for Diseases of the Nervous System, £285 15s.; Central London Ophthalmic Hospital, Gray's-inn-road, W.C., £164 16s. 8d.; Royal Eye Hospital, St. George's-circus, S.E., £292 5s. 10d.; Royal London Ophthalmic Hospital, City-road, E.C., £1006 5s.; Royal Westminster Ophthalmic Hospital, Charing Cross, W.C., £177 5s. 10d.; Western Ophthalmic Hospital, Marylebone-road, W., £71 17s. 6d.; City Orthopædic Hospital, Hatton-garden, E.C., *nil*; National Orthopædic Hospital, Great Portland-street, W., £153 6s. 8d.; Royal Orthopædic Hospital, Oxford-street, W., £110 4s. 2d.; Royal Sea Bathing Hospital, Margate, £287 10s.; St. John's Hospital for Diseases of the Skin, £47 18s. 4d.; St. Peter's Hospital for Stone, Covent-garden, £95 16s. 8d.; Central London Throat and Ear Hospital, Gray's-inn-road, W.C., £57 10s.; Hospital for Diseases of the Throat, Golden-square, W., £62 5s. 10d.; London Throat Hospital, Great Portland-street, W., £34 10s.; Royal Ear Hospital, Frith-street, W., £22 0s. 10d.; Royal Dental Hospital of London, W.C., £213 14s. 2d.; and National Dental Hospital, 149, Great Portland-street, W., £30 13s. 4d.

CONVALESCENT HOSPITALS.

Metropolitan Convalescent Institution, Walton, £822 18s. 4d.; Metropolitan Convalescent Institution, Bexhill, £345; All Saints' Convalescent Hospital, Eastbourne, £383 6s. 8d.; Ascot Priory Convalescent Home, £71 17s. 6d.; Brentwood, for Children, £11 10s.; Charing Cross Hospital Convalescent Home, Limpsfield, £91 0s. 10d.; Chelsea Hospital for Women Convalescent Home, St. Leonards, £38 6s. 8d.; Deptford Medical Mission Convalescent Home, Bexhill, £28 15s.; Mrs. Gladstone's Convalescent Home, Mitcham, £86 5s.; Friendly Societies' Convalescent Home, Dover, £76 13s. 4d.; Hahnemann Convalescent Home, Bournemouth, £43 2s. 6d.; Hanwell Convalescent Home, £19 3s. 4d.; Hendon, Ossuston Home, £52 14s. 2d.; Herbert Convalescent Home, Bournemouth, £28 15s.; Herne Bay Baldwin-Brown Convalescent Home, £28 15s.; Homœopathic Hospital Convalescent Home, Eastbourne, £19 3s. 4d.; King's College Hospital Convalescent Home, Hemel Hempstead, £63 5s.; Mrs. Kitto's Convalescent Home, Reigate, £57 10s.; Mary Wardell Convalescent Home for Scarlet Fever, £86 5s.; Morley House Convalescent Home for Working Men, £162 18s. 4d.; Alfred Beavan Memorial, Sandgate, £134 3s. 4d.; Police Seaside Home, Brighton, £52 14s. 2d.; St. Andrew's Convalescent Home, Clewer, £115; St. Andrew's Convalescent Home, Folkestone, £172 10s.; St. John's Home for Convalescent and Crippled Children, Brighton, £28 15s.; St. Joseph's Convalescent Home, Bournemouth, £57 10s.; St. Leonards-on-Sea Convalescent Home for Poor Children, £81 9s. 2d.; St. Mary's Convalescent Home, Shortlands, £20 2s. 6d.; St. Michael's Convalescent Home, Westgate-on-Sea, £33 10s. 10d.; Seaside Convalescent Hospital, Seaford, £95 16s. 8d.; and Richmond House, Worthing, £19 3s. 4d.

COTTAGE HOSPITALS.

Acton Cottage Hospital, £57 10s.; Beckenham Cottage Hospital, £88 3s. 4d.; Blackheath and Charlton Cottage Hospital, £91 0s. 10d.; Bromley, Kent, Cottage Hospital, £115; Bushey Heath Cottage Hospital, £52 14s. 10d.; Canning Town Cottage Hospital, £99 8s. 4d.; Chislehurst, Sidcup, and Cray Valley Cottage Hospital, £57 10s.; Coldash Cottage Hospital, £17 5s.; Eltham Cottage Hospital, £47 18s. 4d.; Enfield Cottage Hospital, £89 19s. 2d.; Epsom and Ewell Cottage Hospital, £74 15s.; Hounslow Cottage Hospital, £43 2s. 6d.; Kingston Victoria Hospital, £67 1s. 8d.; Livingstone Cottage Hospital, Dartford, £90 1s. 8d.; Mildmay Cottage Hospital, £19 3s. 4d.; Reigate and Redhill Cottage Hospital, £105 8s. 4d.; Sidcup Cottage Hospital, £28 15s.; Tilbury (Passmore Edwards) Cottage Hospital, £38 6s. 8d.; Willesden Cottage Hospital, £125 10s. 10d.; Wimbledon Cottage Hospital, £48 17s. 6d.; Wimbledon South Cottage Hospital, £38 6s. 8d.; and Woolwich and Plumstead Cottage Hospital, £47 18s. 4d.

INSTITUTIONS.

Bolingbroke Hospital, £239 11s. 8d.; Hospital for Invalid Gentlewomen, Harley-street, £138 19s. 2d.; St. Saviour's Hospital and Nursing-Home, £115; National Sanatorium for Consumption, Bournemouth, £95 16s. 8d.; Invalid Asylum, Stoke Newington, £43 2s. 6d.; Firs Home, Bournemouth, £19 3s. 4d.; St. Catherine's Home, Ventnor, £23 19s. 2d.; Friedenheim Hospital for the Dying, £297 1s. 8d.; Oxygen Home, Fitzroy-square, £35 9s. 2d.; Santa Claus Home, Highgate, £57 10s.; Free Home for Dying, Clapham, £124 11s. 8d.; and St. Luke's House, Pembridge-square, W., £95 16s. 8d.

DISPENSARIES.

Battersea Provident Dispensary, £105 8s. 4d.; Billingsgate Medical Mission, £42 3s. 4d.; Blackfriars Provident Dispensary, £19 3s. 4d.; Bloomsbury Provident Dispensary, £15 6s. 8d.; Brixton, &c., Dispensary, £53 14s. 4d.; Brompton Provident Dispensary, £23 19s. 2d.; Buxton-street Dispensary, £28 15s.; Camberwell Provident Dispensary, £79 10s. 10d.; Camden Town Provident Dispensary, £15 6s. 8d.; Chelsea, Brompton, and Belgrave Dispensary, £47 18s. 4d.; Chelsea Provident Dispensary, £13 8s. 4d.; Child's-hill Provident Dispensary, £15 6s. 8d.; City Dispensary, £47 18s. 4d.; City of London and East London Dispensary, £40 5s.; Clapham General and Provident Dispensary, £23; Deptford Medical Mission, £22 0s. 10d.; Eastern Dispensary, £28 15s.; East Dulwich Provident Dispensary, £43 2s. 6d.; Farringdon General Dispensary, £85 0s. 10d.; Finsbury Dispensary, £95 11s. 8d.; Forest-hill Provident Dispensary, £42 3s. 4d.; Greenwich Provident Dispensary, £31 12s. 6d.; Hackney Provident Dispensary, £15 6s. 8d.; Hampstead Provident Dispensary, £52 14s. 2d.; Holloway and North Islington Dispensary, £51 15s.; Islington Dispensary, £59 8s. 4d.; Kensal Town Provident Dispensary, £14 7s. 6d.; Kilburn, Maida Vale, and St. John's Wood Dispensary, £39 5s. 10s.; Kilburn Provident Medical Institution, £44 1s. 8d.; London Dispensary, Spitalfields, £12 9s. 2d.; London Medical Mission, Endell-street, £87 15s.; Margaret-street, for Consumption, £13 8s. 4d.; Metropolitan Dispensary, £53 13s. 4d.; Notting-hill Provident Dispensary, £14 7s. 6d.; Paddington Provident Dispensary, £31 12s. 6d.; Portland Town Dispensary, £13 8s. 4d.; Public Dispensary, Clare-market, W.C., £34 10s.; Queen Adelaide's Dispensary, £27 15s. 10d.; Royal General Dispensary, £22 0s. 10d.; Royal Pimlico Provident Dispensary, £50 15s. 10d.; Royal South London Dispensary, £48 17s. 6d.; St. George's and St. James's Dispensary, £50 15s. 10d.; St. George's, Hanover-square, Provident Dispensary, £36 8s. 4d.; St. John's Wood Provident Dispensary, £45 0s. 10d.; St. Marylebone General Dispensary, £46; St. Pancras and Northern Dispensary, £31 12s. 6d.; St. Pancras Medical Mission, £19 3s. 4d.; South Lambeth, Stockwell, and North Brixton Dispensary, £38 6s. 8d.; Stamford-hill, Stoke Newington Dispensary, £58 9s. 2d.; Tower Hamlets Dispensary, £44 1s. 8d.; Walworth Provident Dispensary, £14 7s. 6d.; Wandsworth Common Provident Dispensary, £11 10s.; Westbourne Provident Dispensary, £20 2s. 6d.; Western Dispensary, £61 6s. 8d.; Western General Dispensary, £115; Westminster General Dispensary, £40 5s.; Whitechapel Provident Dispensary, £35 9s. 2d.; and Woolwich Provident Dispensary, £22 0s. 10d.

MEDICINE AND THE LAW.

Niall v. Tredgold.

AT both the summer and winter meetings of the General Medical Council of last year the case of Dr. William George Niall was heard *in camerâ*, with the result, it may be remembered, that the Council found the charges brought against him to be without foundation. This completed the case as far as the jurisdiction of the Medical Council was concerned, but circumstances have since arisen calling public attention to the matter. The case of Niall *v.* Tredgold, heard before Mr. Justice Joyce in chambers in the Chancery Division a few days back, was the direct outcome of the proceedings before the General Medical Council and possessed certain features of interest to medical men generally. The story told very briefly is as follows. Dr. Niall took Mr. A. F. Tredgold into partnership in 1901, but early in the year 1903 Mr. Tredgold informed him that unless he agreed to a dissolution of the partnership, a return of £230 of the purchase money, and undertook not to reside or have a surgery or place of call within a mile of his former residence a complaint of professional misconduct would be made against him to the General Medical Council. Dr. Niall denied that there were any grounds for such imputations, demanded names and full particulars, and protested against the indignity of having his name dragged before the Council. He also, not unshrewdly, suggested that a deed of dissolution should be drawn up on the terms verbally demanded from him. This was actually done and Dr. Niall, in possession of the draft deed, declined to complete the negotiations for a dissolution until "all imputations were withdrawn or made in such a manner that they could be threshed out." In reply to this Mr. Tredgold appears to have given seven days' notice of dissolution of the partnership and further to have replied that if the matter was settled quietly no names need be mentioned, but unless he had a reply agreeing to the terms by eight o'clock that evening he would proceed to the Council. The case came before the Council, as we have said, in May, 1903, when it was notified to Dr. Niall that the Medical Defence Union would conduct the prosecution. The case was first heard *in camerâ* in May and adjourned on the application of counsel for the defence until November for the production of rebutting evidence, when by the unanimous finding of the Council it was decided that the allegations against Dr. Niall were false.

The London and Counties Medical Protection Society took charge of Dr. Niall's interests. On June 7th, 1904, a writ was served by the Society's solicitor on Mr. Tredgold as defendant, Dr. Niall's claim being for: (*a*) A declaration that the notice of Feb. 9th, 1903, purporting to terminate the partnership then existing between plaintiff and defendant by virtue of articles of partnership dated Sept. 25th, 1901, is not effective or binding on the plaintiff and that the said partnership now exists; (*b*) dissolution of said partnership; (*c*) all necessary and proper accounts; and (*d*) costs. Mr. Justice Joyce adjudged that the partnership

ought to be dissolved as from the date of this judgment, June 30th, 1904—i.e., he gave Dr. Niall what he asked for.

This is a case of considerable interest. Firstly, it illustrates the inconvenience of the existence of rival medical defence associations. If the secretary of the Medical Defence Union had known the answers forthcoming to the charges brought against Dr. Niall, as well as those charges, he could have advised Mr. Tredgold not to adopt an extreme and, as events have shown, misdirected course. If Mr. Tredgold had placed his interests in the hands of the London and Counties Medical Protection Association that society could have told him the error that he was making. Secondly, it shows the weakness of the General Medical Council as a quasi-legal tribunal. The whole matter ought to have been dealt with privately by arbitration. The hearing by the Council *in camerâ* of charges of disreputable conduct against a practitioner is a gravely inconvenient method of procedure, if only because of the fact that the proceedings instituted cannot be kept private. And when the hearing has to be protracted throughout a year the position of the accused man becomes an intolerable one. If arbitration cannot be arranged it is better that prompt and open legal proceedings be taken. The action of the General Medical Council will follow automatically upon the verdict.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County Borough of Halifax.—Dr. J. T. Neech suggests when dealing with the subject of the spread of small-pox by tramps that power should be obtained to arrest the movements of these persons for 14 days or so. He thinks that this power should be bestowed upon the Local Government Board, which central authority should be enabled to declare a given area an "infected area" much in the same way as is now the case with the Board of Agriculture under the Contagious Diseases (Animals) Act. In the event of the Local Government Board declaring any given area to be an "infected area" all common lodging-houses and tramp wards would be placed in quarantine. How much simpler it would be to have compulsory revaccination as is the case in Germany. In discussing scarlet fever Dr. Neech refers to a little outbreak of seven cases of that disease in which each patient obtained milk from a certain farm. No trace of scarlet fever could be discovered at the farm but on examining the cows it was found that in the case of one the udder was diseased and that serous fluid and pus could be expressed therefrom. The secretion was examined but nothing resembling the streptococcus of scarlet fever could be isolated. There seem also to have been several cases of sore-throat and enlarged glands in connexion with this milk-supply. The facts available are not, however, sufficiently precise to enable a causal connexion between the milk and the scarlet fever and sore-throat prevalence to be made out. The large number of deaths from measles which occur in children aged from one to five years has led Dr. Neech to suggest that children should not be allowed to attend school before five years of age. He points out that the Education Acts do not require such attendance and that it would not be a great advance on this position to refuse such children admission altogether. There are many persons who will agree with this proposal.

City of Coventry.—Dr. E. H. Snell points out in his annual report that if the decline in the death-rate from pulmonary tuberculosis which has been going on for the last 60 years continues it may be anticipated that the disease will have become extinct before the middle of the present century. Although this may be perhaps a somewhat Utopian idea Dr. Snell's words on the subject of tuberculosis are well worth quoting as an illustration of the views of some of our more thoughtful medical officers of health. He says: "There is no doubt that the neglect of the first principles of hygiene, embodied in the words light, ventilation, and cleanliness, and all which they connote, have more influence over the occurrence of this disease that has hitherto been imagined. The application of these to its cure, as in the open-air treatment, is of infinitely less consequence than their application to the prevention of the disease. When all houses are properly lighted and properly ventilated by windows and doors that are opened the chances of the propagation of tuberculosis will indeed be small." It is important, Dr. Snell adds, to have regard to these general principles and not to become engrossed too fully in "details such as disinfection, the prevention of spitting, the consumption of tuberculous meat and tuberculous milk, and the isolation of the phthisical, which, however important they may be, can never by themselves be expected to eradicate the disease."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 9277 births and 6482 deaths were registered during the week ending August 13th. The annual rate of mortality in these towns, which had been 14·1, 16·4, and 19·8 per 1000 in the three preceding weeks, further rose last week to 22·1 per 1000. In London the death-rate was 21·4 per 1000, while it averaged 22·4 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·8 in South Shields, 9·0 in Hornsey, 10·2 in Hastings and in King's Norton, 10·4 in Devonport, 10·5 in West Hartlepool, 10·7 in Blackburn and in Halifax, and 11·3 in Coventry; while the highest rates were 31·2 in Birmingham, 32·4 in Aston Manor, 33·0 in East Ham, 34·6 in York, 35·5 in Bootle, 35·7 in Wigan, 36·7 in Leyton, and 37·7 in Liverpool. The 6482 deaths in these towns last week included 2710 which were referred to the principal infectious diseases, against 793, 1255, and 2059 in the three preceding weeks; of these 2710 deaths, 2423 resulted from diarrhœa, 122 from measles, 74 from whooping-cough, 47 from diphtheria, 28 from scarlet fever, 13 from "fever" (principally enteric), and three from small-pox. No death from any of these diseases was recorded last week in Hastings, Bournemouth, or South Shields; among the other towns they caused the lowest death-rates in Devonport, King's Norton, Blackburn, Stockton-on-Tees, West Hartlepool, and Tynemouth; and the highest rates in West Ham, East Ham, Leyton, Walthamstow, Aston Manor, Liverpool, Bootle, York, and Hull. The greatest proportional mortality from measles occurred in Brighton, Stockport, Bootle, Salford, and Hull; from whooping-cough in Burton-on-Trent, Bootle, Huddersfield, and Rhondda; and from diarrhœa in West Ham, East Ham, Leyton, Walthamstow, Birmingham, Aston Manor, Liverpool, Bootle, Burnley, York, and Hull. One fatal case of small-pox was registered in London, one in Coventry, and one in Stockport, but none in any other of the 76 large towns. The number of small-pox patients in the Metropolitan Asylums hospitals, which had been 51, 46, and 32 at the end of the three preceding weeks, had further declined to 21 at the end of last week; no new case was admitted during the week, the numbers in the three preceding weeks having been six, seven, and two. The number of scarlet fever cases in these hospitals and in the London Fever Hospital on Saturday last, August 13th, was 1763, against 1754, 1784, and 1758 on the three preceding Saturdays; 189 new cases were admitted during the week, against 234, 243, and 168 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 120, 118, and 112 in the three preceding weeks, rose again last week to 121, but were slightly below the number in the corresponding period of last year. The causes of 51, or 0·8 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Nottingham, Salford, Bradford, Hull, and in 51 other smaller towns; the largest proportions of uncertified deaths were registered in Ipswich, Birmingham, Smethwick, Liverpool, St. Helens, Manchester, Middlesbrough, and Sunderland.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 14·1, 14·1 and 14·6 per 1000 in the three preceding weeks, further increased to 15·7 per 1000 during the week ending August 13th, but was 6·4 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 8·1 in Paisley and 12·3 in Perth, to 15·6 in

Aberdeen and 17·4 in Glasgow. The 519 deaths in these towns included 68 from diarrhœa, 26 from whooping-cough, six from measles, five from diphtheria, two from scarlet fever, and two from "fever," but not any from small-pox. In all, 109 deaths resulted from these principal infectious diseases last week, against 68, 58, and 85 in the three preceding weeks. These 109 deaths were equal to an annual rate of 3·3 per 1000, which was 6·0 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 23, 24, and 48 in the three preceding weeks, further rose last week to 68, of which 50 occurred in Glasgow, eight in Dundee, four in Aberdeen, two in Edinburgh, and two in Greenock. The deaths from whooping-cough, which had been 22, 19, and 26 in the three preceding weeks, were again 26 last week, and included 17 in Glasgow, five in Edinburgh, two in Paisley, and two in Leith. The fatal cases of measles, which had been 12, seven, and five in the three preceding weeks, rose again last week to six, of which two were registered in Glasgow and two in Edinburgh. The deaths from diphtheria, which had been two in each of the two preceding weeks, increased to five last week, and included three in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 75, 55, and 47 in the three preceding weeks, further declined last week to 39, and were considerably below the number in the corresponding period of last year. The causes of 13, or nearly 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 17·5, 17·9, and 21·2 per 1000 in the three preceding weeks, further rose to 27·0 per 1000 during the week ending August 13th. During the past four weeks the death-rate has averaged 20·9 per 1000, the rates during the same period being 18·0 in London and 13·7 in Edinburgh. The 196 deaths of persons belonging to Dublin registered during the week under notice were 42 in excess of the number in the preceding week and included 46 which were referred to the principal infectious diseases, against 15, 12, and 25 in the three preceding weeks; of these, 33 resulted from diarrhœa, five from measles, four from whooping-cough, two from diphtheria, one from scarlet fever, and one from "fever," but not any from small-pox. These 46 deaths were equal to an annual rate of 6·3 per 1000, the death-rates last week from the same diseases being 8·6 in London and 1·9 in Edinburgh. The fatal cases of diarrhœa, which had been four and 15 in the two preceding weeks, further rose last week to 33. The deaths from measles, which had been five, four, and three in the three preceding weeks, increased again to five last week. The four fatal cases of whooping-cough corresponded with the number in the preceding week. The 196 deaths in Dublin last week included 69 among children under one year of age and 36 among persons aged 60 years and upwards; the deaths of infants were 26 in excess of the number in the preceding week, while those of elderly persons showed a slight decline. Six inquest cases and three deaths from violence were registered; and 58, or nearly a third, of the deaths occurred in public institutions. The causes of seven, or nearly 4 per cent., of the deaths in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Surgeons: M. P. Jones to the *Proserpine* (to date August 24th, 1904), and C. C. Macmillan, D.S.O., to the *Eclipse* (undated).

ROYAL NAVAL VOLUNTEER RESERVE.

The undermentioned has been appointed Lieutenant: Robert Roxburgh (dated August 11th, 1904).

ROYAL ARMY MEDICAL CORPS.

Colonel R. Blood retires on retired pay (dated August 13th, 1904). Lieutenant S. C. Bowle, from the Seconded List, to be Lieutenant (dated August 1st, 1904). Lieutenant W. B. Taylor resigns his commission (dated August 10th, 1904).

Captain T. H. M. Clarke, C.M.G., D.S.O., and Captain E. C. Hayes join the Home District for duty. Captain S. W. Sweetnam is posted to the Station Hospital, Colchester, for duty. Major J. C. Weir, sanitary officer of the Home District, is directed to investigate the cause of diphtheria among troops at the Guards' Depôt, Caterham.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major A. D. Fraser to be Surgeon-Lieutenant-Colonel (dated August 2nd, 1904).

VOLUNTEER CORPS.

Rifle: 4th Volunteer Battalion the King's (Liverpool Regiment): Arthur Price, late Surgeon, Royal Naval Artillery Volunteers, to be Surgeon-Captain (dated August 13th, 1904). 5th (The Hay Tor) Volunteer Battalion the Devonshire Regiment: Surgeon-Lieutenant W. J. Stephens resigns his commission (dated August 13th, 1904). 3rd Volunteer Battalion the Royal Welsh Fusiliers: Surgeon-Lieutenant J. R. Williams to be Surgeon-Captain (dated August 13th, 1904). 3rd Volunteer Battalion the South Wales Borderers: Surgeon-Major J. R. Essex to be Surgeon-Lieutenant-Colonel (dated August 13th, 1904).

VOLUNTEER OFFICERS' DECORATION.

The King has conferred the Volunteer Officers' Decoration upon the undermentioned officers of the Volunteer Force:—*Home District: Rifle:* 18th Middlesex Rifle Corps: Surgeon-Major Clement Godson. *South-Eastern District: Artillery:* 2nd Sussex Royal Garrison Artillery (Volunteers): Surgeon-Major Henry Habgood. *Scottish District: Rifle:* 5th (Glasgow Highland) Volunteer Battalion the Highland Light Infantry: Surgeon-Major George Bell Todd.

DEATHS IN THE SERVICES.

Major John Henry Greenway, R.A.M.C., on August 8th, at Wynberg Camp, Cape Town. He entered the service in 1885 and reached the rank of Major in 1897. During the South African war he served in the Orange River Colony.

THE NEW ARMY SCHEME.

We make no apology for again referring to Mr. Arnold-Forster's new army scheme because of the far-reaching organic changes it introduces, the nature and effect of which the nation does not seem wholly to have grasped and understood. Such should certainly be the case before finally committing itself to carry them out. The general principles laid down by the War Minister will commend themselves to everyone. To reduce expenditure, to maintain a regular army mainly for service abroad and ready for war, to diminish numbers at home, and to improve generally the quality of our troops by lopping off, as far as practicable, all inefficient and redundant material, are unquestionably excellent ideas and aims. But when we pass from the abstract to the concrete and have to formulate the methods in detail it becomes another and much more difficult matter. The net result of the scheme shows a saving of something over a million only, and this has to be obtained at a big reduction of the forces at command. Mr. Arnold-Forster is very enthusiastic as to the success of his scheme and in coöperation with the Army Council will no doubt do all he can to carry it out. He thinks that by the additional attractiveness of the service and the improvement, sanitary and social, of barrack buildings, and by adding to the soldier's comfort, the necessary number of recruits of the requisite age and physical quality will be forthcoming for the maintenance of a nine years' foreign service army. But this is a matter which has still to be put to the test of experience. At what age is the soldier to be sent to India and abroad? That is an important medical question. Some misgiving is felt, too, about the newly proposed military depôt system which will probably prove an expensive item.

SOLDIERS' HOMES NEAR BATH.

The Bishop of Bath and Wells on August 6th formally opened two homes for men of the Royal Horse and Field Artillery, which have been erected at Claverton, near Bath. The homes are the gift of Mrs. and Miss Fordyce Buchan, in memory of Captain G. Fordyce Buchan, R.F.A., who died from enteric fever at Bloemfontein, May 21st, 1900. The bishop, in the course of his speech, recalled the incident how, when Captain Buchan was going to the war in South Africa on board ship inoculation was recommended

as a protection against enteric fever. When the operation was being performed it was found that there was not sufficient serum for all to be inoculated. Captain Buchan said that he would go without it. The others were all operated upon and none of them died from enteric fever. Captain Buchan, however, who was not inoculated, died from enteric fever at Bloemfontein, the bishop adding that his unselfishness had practically caused his death.

THE WAR IN THE FAR EAST.

In the great naval actions which have recently taken place the Russians have been badly defeated and whatever considerations they may have had for their own escape and safety or whatever strategical or other purposes they may have had in view with the Port Arthur and Vladivostok squadrons they have failed to accomplish them. As regards the siege of Port Arthur a general assault on the part of the Japanese has begun and as their troops are in overwhelming force and occupy commanding positions its fate seems to be sealed; and lastly, the position of General Kuropatkin's force is still a perilous one, menaced as it is by the surrounding Japanese armies. The rains have again returned with the result of impeding all land operations and probably of increasing the sickness on both sides. It goes without saying that with the Russian naval disasters in the Pacific it is extremely unlikely that any fleet from the Baltic, should one even have started, can reach its destination before Port Arthur has fallen. The capture of that fortress, while inflicting a very heavy blow on Russian prestige in the East (nothing has probably happened like it since the fall of Sebastopol), will liberate to a great extent the besieging Japanese forces in that direction and enable them to take part in the military operations going on elsewhere. The losses in men and money entailed by this war have been deplorable and enormous. Whether Russia will continue to prosecute it to the end, hoping to break down her enemy by weight of numbers and finance, or whether the Czar, influenced by the auspicious birth of a son and other State considerations, may seek some means of peace, no one can say. We are glad to notice, in the meantime, that the far-seeing rulers of Japan have apparently sought to do what they could in the mitigation of the horrors of the siege by offers for the removal of all non-combatants from Port Arthur, while on the occasion of the sinking of the *Rurie* the Japanese squadron hastened to rescue the drowning Russians, of whom they picked up about 600. But little is forthcoming in regard to the purely medical news of the war. It has been stated that there are many thousand sick and wounded inside Port Arthur accommodated in the various public buildings, all of which have been utilised as hospitals, but such statements rest upon mere hearsay and conjecture. It may, nevertheless, be safely assumed that there must be a large number of unfortunate sufferers inside the besieged garrison. According to the latest Russian official returns the losses of the Port Arthur garrison during the fighting between August 8th and 10th were: Killed, seven officers and 248 men; wounded, 35 officers and 1653 men; missing, one officer and 83 men.

The *Standard* of August 10th contains a long and interesting communication from its special correspondent headed "Cruise of the *Manshu Maru*" and dated June 18th. While at Sasebo he was able to see the arrangements made for transporting the sick and wounded from the fleet to the base hospital. A passenger vessel has been turned into a hospital ship for this purpose, the saloons fitted up with swinging cots, and the cabins used as operating and dressing rooms. The ship is manned by seven surgeons and 50 nurses, and as the vessel only accommodates 180 patients it will be seen what great importance the Japanese attach to female nurses, there being one nurse to every three or four patients. The ship can make the voyage to the fleet and back in about five or six days. Admiral Togo's fleet has, up to the present, been singularly free from serious sickness. There have been a few cases of enteric fever, while pleurisy has been responsible for most of the other invalids. Pleurisy is a disease the Japanese are somewhat prone to. The base hospital at Sasebo at present contains 305 patients, mostly sick or wounded by shell fire. Since the commencement of the war only seven deaths have occurred among those admitted into hospital.

The health of the troops of the first Japanese army, despite reports to the contrary, is stated to be excellent. They are not suffering from any febrile infectious disease and there is possibly less mortality or disease among them than in any army that has previously taken the field.

RUSSIAN MEDICAL STUDENTS: REDUCTION IN THE NUMBER OF CANDIDATES.

The list of applications just closed for enrolment as students in the Imperial Military Medical Academy numbers about 500, or some 300 less than last year. The *Novoe Vremya* says the results of the examinations for admission will be known in the latter half of August.

Correspondence.

"Audi alteram partem."

CONTRACT PRACTICE.

To the Editors of THE LANCET.

SIRS,—We have not yet arrived at a solution of the difficulty arising when a dispute occurs between medical men and their patients in contract practice; first, as to how we can keep away those who are ready to take advantage of any dispute; and next, when a medical man has come into a district to take up the practice at a lower rate, what shall be the proper way of dealing with such an individual. In short, we want some method of properly dealing with a man who takes up the position of a "blackleg." The warning notices put in THE LANCET and those put in the lay papers by our medical union have to a certain extent been useful, but they have not stopped all those who are indifferent to the stigma of "blackleg." And when the "blackleg" is duly installed in a district it is extremely difficult to get him out of that position. A few have been persuaded to relinquish the ill-gotten appointment; some have developed such weakness of character that their presence has shown up the righteous position of the old practitioner. Boycotting is generally carried out but it does not cause the offender to leave the district. In most cases the "blackleg" obtains his position through the canvassing of a committee of working men who do this work freely and with energy.

The General Medical Council has passed a resolution condemning any medical man who shall take up such a position and against whom the charge of canvassing can be satisfactorily proved. This is the point where we meet with our difficulty in such cases. Although we know that canvassing is done by agents on behalf of the intruder, yet it is extremely difficult to obtain the proof that is essential and to satisfy the General Medical Council. The secretaries of the County of Durham Medical Union have been in correspondence with the General Medical Council with a view to get help from that quarter, proposing the attendance of a deputation from this union to discuss the point, but we can make no progress towards accomplishing anything. Now we turn to the profession as a whole and ask as many practitioners as possible to put their names to a petition to the General Medical Council urging "upon the Council the desirability of supporting medical men who struggle to maintain the honour and dignity of the profession, especially when opposed by others who are ready to take advantage of any dispute in contract practice by canvassing or underselling, or in the obtaining of contract appointments by similar means." Copies of this petition may be obtained from Messrs. Graham and Shepherd, 32, John-street, Sunderland, secretaries to the County of Durham Medical Union.

I am, Sirs, yours faithfully,

EDWARD JEPSON,
President, County of Durham Medical Union.

Durham, August 11th, 1904.

TRANSMISSIBILITY OF PLAGUE TO THE MONGOOSE.

To the Editors of THE LANCET.

SIRS,—At a well-attended meeting of the Epidemiological Society on Nov. 20th, 1903, to hear Dr. W. J. Simpson's paper on the Epidemiology of Plague (an account of which

was published in THE LANCET of Nov. 28th, 1903, p. 1506), Mr. B. G. Corney (Fiji) inquired whether mongooses suffered from plague. He mentioned that the matter was of some importance because some of the Colonial islands had imported ichneumons to kill off the rats. None of us were able to answer his question, though we told him that ferrets and many other animals were susceptible and therefore probably mongooses were not immune. On consulting the report of the German Plague Commission, I see that one ichneumon died from characteristic plague six days after it was subcutaneously inoculated on the hind leg. Another ichneumon was fed with the organs (containing many bacilli) of a rat which had died from plague; the animal succumbed to plague five days later, being apparently infected through the mucous membrane of the mouth, not from the stomach. Again in Nothnagel's Encyclopædia (Band I.) in the article "Die Pest von Müller und Poch," Ichneumonratten (Herpestes griseus) were experimented on. Though feeding these animals with plague bacilli did not produce plague, they died after intraperitoneal infection and the post-mortem appearances were those of septicæmic plague. I think it must be assumed that a mongoose is a dangerous animal to introduce into any colony affected, or likely to be affected, by human plague. The mongooses in Egypt live chiefly in the desert, and therefore there is no evidence as yet of their having been attacked by plague.

I am, Sirs, yours faithfully,

F. M. SANDWITH, M.D. Durh., F.R.C.P. Lond.,
Lecturer at the London School of Tropical Medicine.

THE NATURE AND ETIOLOGY OF CANCER.

To the Editors of THE LANCET.

SIRS,—Your leading article in THE LANCET of August 13th, p. 473, headed "The Nature and Etiology of Cancer," will be read by everyone interested in that question with great appreciation of its temperate and most careful analysis and of its fulness of home truths. The concluding sentences are entitled to special weight. The article says: "Let those who in future essay to advance our knowledge of cancer regard it as their first duty to add *new facts* to those long known. They may be more difficult to find than new explanations of the old ones but their accumulation will assuredly point somewhere much more definitely than the too many explanations of the old facts have done."

More than 20 years ago I ventured to say in a preface to an essay on Cancer that I would point to the discussion on cancer at the Pathological Society of London in 1874 to show how unsatisfactory the then state of our knowledge was; that there was a want of well-ascertained facts and that the opportunity of contributing facts of great interest in relation to cancer must fall to almost every practitioner. It is to be hoped that your article will stimulate the contribution of the facts which are so much needed. Fortunately, at the present time there now exist centres of investigation to which contributions can be sent.

I am, Sirs, yours faithfully,

London, August 16th, 1904. T. W. NUNN.

PARALYSIS FROM LESION OF THE UPPER PART OF THE BRACHIAL PLEXUS.

To the Editors of THE LANCET.

SIRS,—In a note on this subject published in THE LANCET of August 13th, p. 447, I described two cases in which as the result of injury the deltoid, biceps, brachialis anticus, and supinator longus were paralysed (as in Erb's paralysis), but in addition there was paralysis of the triceps and extensors of the wrist and fingers. I suggested that the cause of this form of paralysis might be lesion of the seventh cervical nerve root in addition to lesion of the fifth and sixth roots and that the lesion might affect the upper cord of the brachial plexus (formed by the union of these three roots) or the roots before their union. Since the report of these cases was sent to THE LANCET Dr. Wilfred Harris has drawn attention to the anatomical abnormalities in the composition of the nerve trunks of the plexus—the "prefixed and postfixed types" of the brachial plexus. He points out that "the whole plexus may be, therefore, shifted up or down as much as nearly half a root and this anatomical variation is of great importance in the diagnosis of nerve root lesion" (see report of proceedings of the Neurological Society, *Brain*, 1903, pp. 613–15). In any case of paralysis of the arm of the form which I described it would, of course, be impossible to say without post-mortem examination whether the paralysis was due to lesion of the fifth, sixth, and seventh nerve roots (united or separate), or whether the case was one of lesion of the fifth and sixth roots only, in a prefixed type of brachial plexus. The latter would be a possible explanation in addition to the one which I have mentioned in my report.

I am, Sirs, yours faithfully,

Manchester, August 16th, 1904. R. T. WILLIAMSON.

MEMORIAL TO SIR THOMAS BROWNE, M.D.

To the Editors of THE LANCET.

SIRS,—The Sir Thomas Browne Memorial Committee has commissioned Mr. Henry Pegram, A.R.A., to prepare the statue which is to be erected at Norwich in memory of the famous author of the "Religio Medici." Mr. Pegram contributed to this year's Academy "Sibylla Fatidica," which has been bought for the Tate Gallery by the President and Council of the Academy as trustees of the Chantrey bequest. A few more pounds are still required to complete the necessary funds and contributions may be sent either to me, at King-street House, Norwich, or to the "Sir Thomas Browne Memorial Account" at Messrs. Barclay and Co.'s Bank, Norwich.—I am, Sirs, yours faithfully,

August 12th, 1904. F. R. EATON, Honorary Secretary.

THE VALUE OF THE ADDITION OF CITRATE OF SODA TO COW'S MILK IN INFANT FEEDING.

To the Editors of THE LANCET.

SIRS,—Dr. F. J. Poynton's instructive paper on the Value of the Addition of Citrate of Soda to Cow's Milk in Infant Feeding in THE LANCET of August 13th, p. 433, leads me to add my testimony to the great usefulness of this simple expedient. Since reading Dr. A. E. Wright's suggestion, "On the Possible Advantages of Employing Decalcified Milk in the Feeding of Infants and Invalids" in THE LANCET of July 22nd, 1893, I have constantly ordered the addition of citrate of soda for persons who could not otherwise take milk. Dr. Wright in his original paper says that an addition to milk of 1 in 200 of citrate of soda suffices to prevent any rennet coagulation. As an ordinary tumbler holds roughly from seven to nine ounces, or 200 to 250 cubic centimetres, one gramme of citrate of soda to a tumblerful of milk makes the right proportion. This decalcified milk has, in my experience, been always well borne by persons who had previously been upset by milk. In typhoid fever it forms an ideal nourishment.

I am, Sirs, yours faithfully,

WILLIAM R. HUGGARD.

Davos-Platz, Switzerland, August, 16th, 1904.

A MINISTRY OF PUBLIC HEALTH.

To the Editors of THE LANCET.

SIRS,—The medical profession is consistently educating the public in the value that should be attached to State medicine and the need for a definite national or State "policy" in its favour. In August, 1904, the following resolutions have been passed:—

1. The Royal Institute of Public Health at Folkestone advocated a Ministry of Health and recommended that the subject should be made an official one in the programmes of all international or national health congresses.

2. The Oxford meeting of the British Medical Association desired that a Royal Commission be appointed to report upon the suggested reorganisation of the Local Government Board; the principles of which were defined in a memorandum to the Medico-Political and Public Health Committees.

3. The Interdepartmental Committee on Physical Deterioration, among 52 excellent recommendations, reported on the advisability of forming an advisory council. This would advise the Government on all legislative and administrative points concerning the public health, and would receive and

apply the information derived from the proposed Bureau of the Anthropometric Survey with the whole weight of Government authority and scientific prestige behind it.

4. Sir Lauder Brunton is forming the National League for Physical Education and Improvement, embracing a comprehensive educational scheme.

Undoubtedly, however, one of the strongest educational agencies would be a strenuous expert Minister of Health of Cabinet rank. Such an appointment has been approved at congresses at Exeter in 1902 and at Bradford, Swansea, and Brussels in 1903. May I be allowed to repeat the outlines of a Ministry based on the War Office Reorganisation scheme at this opportunity? They are, in brief, an advisory committee, an administrative council, an increased inspecting staff, and an extended sanitary and pathological service. The keystone of the fabric is, however, a leader in the person of a Minister and I venture to urge that the British Medical Association and the National League for Physical Education make this the focus of their aspirations. In consideration of the increasing numbers and the reputation of those of our profession interested in this organisation of State medicine it appears only necessary to imbue the laity with similar sentiments through the branches of the British Medical Association and other agencies.

I am, Sirs, yours faithfully,

F. G. BUSHNELL, M.D.,
Pathologist to the Sussex County Hospital.

Brighton, August 13th, 1904.

THE USE OF PHENYLHYDRAZIN IN THE CLINICAL EXAMINATION OF URINE.

To the Editors of THE LANCET.

SIRS,—I am afraid that Dr. A. F. Bilderbeck Gomess has not realised the reason for which my paper was written on the Use of Phenylhydrazin in the Clinical Examination of Urine.[1] I am in entire agreement with Dr. Gomess on the value of phenylhydrazin in the clinical examination of urine and, as he suggests, the reagent should be applied to the urine directly and not after previous hydrolysis by boiling with hydrochloric acid. In this case the test is of the greatest value in the detection of sugar in a diabetic urine and as I pointed out in my paper normal urines do not give characteristic crystals. I regard the phenylhydrazin test as applied directly to a urine of greater value than the Fehling's test and many of the other tests used for the detection of sugar in urine. The object of my paper was to point out that the production of crystals from a urine which had been previously hydrolysed by boiling with hydrochloric acid was not of any pathological significance, since, as I have proved, normal urines give very characteristic crystals with phenylhydrazin after treatment in this way. It has recently been stated that the production of crystals in a urine on treatment with phenylhydrazin after previous hydrolysis is an indication of disease of the pancreas, and the object of my paper was to point out that this reaction is given equally well with normal urines and cannot, therefore, be regarded as an indication of pancreatic disease.

I am, Sirs, yours faithfully,

August 15th, 1904. W. H. WILLCOX.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Small-pox in Dublin.

AT a special meeting of the public health committee held in the municipal buildings on August 10th, Sir Charles A. Cameron reported that three cases of small-pox had occurred in Dublin and had been conveyed to the isolation hospital. He added that on no previous occasion was the department so well prepared as at present to resist the spread of small-pox on its first appearance. He said, moreover, that there was every reason to believe that this small outbreak would be stamped out at once. There were no additional cases up to August 16th.

Portrush Cottage Hospital.

A bazaar was opened in the town hall, Portrush, co. Antrim, on August 9th for the furnishing and equipment of the Cottage Hospital, the starting of which is due to the efforts of a local lady, Miss Reynolds. The Provost of Trinity College, Dublin (Dr. Traill) presided and delivered an interesting address on the value and importance of hospitals.

Police Appointment.

Dr. Alexander Montgomery has been appointed medical attendant to the Royal Irish Constabulary in C District of Belfast in succession to Dr. W. M. Killen, resigned. There were 25 candidates.

Small-pox in Ulster.

This disease, which was introduced from Glasgow into Belfast, has spread in different directions over Ulster, the last place for it to appear being in Monaghan where there have been two cases, one of which, a girl, has died. 15 cases are being treated in Castleblayney workhouse fever hospital from Crossmaglen.

Appointment for a Belfast Medical Professor.

Dr. J. Lorrain Smith, Musgrave professor of pathology, Queen's College, Belfast, has been appointed joint lecturer in the same subject in the Victoria University, Manchester. Professor S. Delépine is to take the public health portion of the chair and Professor Smith is to have the pure pathology. Dr. Thomas Houston of Belfast will be a candidate for the chair thus vacated at Queen's College. He has been an assistant to Professor Smith, is a research scholar of the British Medical Association, and he held the pathological studentship in the Royal University. He has done considerable original work and is at present joint lecturer on medical jurisprudence with Professor Smith.

Queen's College, Belfast.

The report of the president of Queen's College, Belfast, for the session 1903–04 shows that in the Faculty of Medicine there was an increase in the number of entrances; indeed, the entrances at Queen's College, Belfast, were higher than those in any other medical school in Ireland with the exception of the Catholic University School of Medicine, Dublin, which shows an entrance of three more students. There is also an increase in the law and engineering faculties. Deep regret is expressed at the continued refusal of the Government to subsidise to a fuller extent the College, which is a Crown one, and still more as the public have subscribed nearly £100,000 for its equipment.

Health of Belfast.

From June 19th until July 16th 12 cases of small-pox have been notified and since the outbreak in October last 102 persons have been admitted into the small-pox hospital, of whom 75 were discharged cured, three died, and there were still 24 in the hospital, while 328 "contacts" passed through the intercepting hospital and 61 remained under observation. Not an individual who has been revaccinated has been admitted into the small-pox hospital. At present Belfast is comparatively free from infectious disease, the number of cases of scarlet fever being much fewer than for a considerable time, as also are those of typhoid fever. The annual death-rate in Belfast was 17·3 for the past four weeks.

August 16th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Surgical Treatment of Acute Hepatitis.

AT the meeting of the Society of Surgery held on July 27th M. K. J. L. Faure read a paper sent in by M. Denis of Constantinople. It dealt with the case of a sailor who showed symptoms of acute hepatic infection—viz., jaundice, fever, hypochondriac pain, and enlarged liver. M. Denis opened the abdominal cavity and found the liver much enlarged and congested. He punctured the liver in various places without result for he found no pus. He then closed the abdomen and to his great astonishment the temperature fell and never rose again and the patient recovered completely. The result in this case may be compared with many others previously sent in by various observers. Recovery has often taken place after simple laparotomy, together with exploratory puncture, and in some cases the patient has recovered after laparotomy alone. At the same meeting M. Lejars gave an account of the case of a woman who had been admitted into the hospital in

[1] THE LANCET, July 23rd, 1904, p. 211.

a very serious condition. She was extremely thin, slightly jaundiced, and her liver was enlarged. Laparotomy was performed and M. Lejars found a tumour, continuous with the liver, of a yellowish-grey colour and of a woody consistency. M. Lejars did nothing further, believing that he had to deal with a new growth, and closed the abdomen. To his great astonishment the patient began to improve and at the end of a few months the tumour had entirely disappeared. Ten years later, however, a gummatous swelling appeared on the tibia which yielded to antisyphilitic treatment. The tumour of the liver was doubtless a gumma but it disappeared without any other treatment except the simple laparotomy. Various other speakers at the meeting related cases confirming the results in the two cases mentioned above.

The Sale of a Medical Practice.

Questions as to the sale of a practice often arise and are the source of much discussion and very often of legal proceedings. Jurists, however, have little by little arrived at certain definite canons which must be observed in such circumstances. As a legal principle, the simple sale of a practice—that is to say, when nothing is transferred except the trust and the willingness of the patients to be transferred from one medical man to another—has no legal value whatever, but the sale of a practice is recognised as being of definite legal value when at the same time as the patients are transferred other objects are handed over—for instance, personal effects, instruments, and medical books, the transfer of the lease of a consulting-room. An engagement on the part of the vendor to introduce the buyer to his patients, or a bond by the vendor not to practise within a certain definite radius of his old sphere of work, also make the transaction a genuinely legal one. Another point has just been decided—viz., Is the transfer of a practice of equal legal value when the sale is carried on not by the actual practitioner himself but by his widow or by his heirs? Recently a medical man bought the practice of a deceased brother practitioner and after the contract had been signed he refused to execute it because in the meantime he had found what he considered a better opening in another town, and when the widow of the deceased practitioner asked for damages he pleaded that the contract of the sale was of no legal value. The matter came before the courts and the tribunal gave judgment in favour of the medical man, but the Court of Appeal reversed this decision and granted the widow the damages which she demanded, giving as reasons for this judgment that the sale of the practice included articles of furniture, the lease of a consulting-room, and an engagement to give a personal introduction to the patients.

Psychotherapy and Hysteria.

At a meeting of the Academy of Medicine held on July 16th M. Janet described some abnormal psychological conditions presented by a young girl who had become hysterical through grief for the death of her mother. While suffering from delirium, hallucinations, and hysterical attacks she had an unusually full recollection of the death and of all the circumstances associated with it, but in the lucid intervals when her state might be regarded as normal she had almost no recollection of the very events in question and appeared to look on her mother's death as a very trivial matter. There were therefore hypermnesia during the attacks and amnesia during the intervals between the attacks. M. Janet has observed several similar cases. He commenced by "re-educating" the memory of the patient, and this being accomplished the phenomena of hypermnesia and hallucination disappeared. M. Janet then called attention to the importance and value of psychotherapy, provided always that it be applied in the proper degree and judiciously employed in suitable cases.

Use of an Artificial Larynx after Laryngectomy.

At a meeting of the Surgical Society held on July 20th M. Sébileau reported a case of cancer of the larynx in which he had performed an operation similar to that of Périer. Recovery was rapid and the scar in the neck was quite sound. To replace the larynx the choice lay between Gluck's artificial larynx, which was a modification of a tracheotomy tube, and Martin's artificial larynx, which was not applicable in the present instance as the skin had to be brought over it and an extensive operation would have been necessary in order that it might be placed in position. M. Sébileau therefore asked M. Deler, instructor in prosthetics at the Dental School, to make a special pattern of the larynx. The apparatus constructed by M. Deler consisted (1) of a rectangular box attached in front of the cannula worn by the patient and having a valve which permitted inspiration but not expiration; and (2) of a portion contained within the mouth corresponding to the palate and glottis. The result was very good and the patient could make himself understood quite well, although the tone was decidedly different from that of the natural voice.

Intra-articular Osteotomy for Ankylosis of the Knee-joint.

At the same meeting of the Surgical Society M. Broca described a case under the care of M. Guillon of La Tremblade. The patient was a boy, 12 years of age, who suffered from osseous ankylosis of the knee-joint, the effect of an injury. M. Guillon performed intra-articular osteotomy and obtained a good result as appeared from a photograph which was shown. These cases of special osteotomy are rare, but one in the elbow has been already reported to the Surgical Society. M. Broca said that M. Guillon had placed the limb after the operation in a position of semiflexion. Although the result was good this position was hardly to be recommended.

August 15th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Resignation of Dr. Shrady.

Dr. George F. Shrady, who for more than 38 years has been the editor of the *New York Medical Record*, has just resigned that position. Dr. Shrady has occupied a unique place in American medical journalism, in fact, with the exception of the first Mr. Wakley of THE LANCET, no editor of a medical journal published in English has held a like position for so long a period. There have also been points of similarity between the editorial careers of the American and English medical editors. Dr. Shrady brought the journal of which he was editor from an insignificant sheet to a place in the front rank of American medical journalism. In addition to his executive abilities and courage Dr. Shrady in his editorial capacity was possessed of both tact and a remarkable gift of seizing upon salient points of medical policy and presenting them clothed in forcible, expressive, and attractive phraseology. Above all, he has been a staunch and true friend to the medical man, has studied his interests, advocated his cause, and fought to redress his wrongs with the most unselfish zeal. He has left a decided mark upon American medical journalism. Dr. Thomas L. Stedman, the former associate editor of the *Medical Record*, who has assisted Dr. Shrady in the management of the journal for some 20 years, now becomes editor-in-chief.

Suicide in New York City.

There has been a decided tendency towards increase in the number of suicides in New York city. Records of the Police Department and of the Health Board show that during the first quarter of the current year 208 individuals took their own lives. It is further computed that the number of suicides for the year will be more than 900. This year 224 out of 1,000,000 will have put an end to themselves, the annual ratios for the four preceding years having been 215, 187, 206, and 150. Of 806 persons who committed suicide in New York city last year 35 per cent. were native born, 26 per cent. were German, 7 per cent. were Irish, 5 per cent. were Russian, 5 per cent. were Austrian, and 3 per cent. were English. Poisoning was the most common mode of suicide, about 47 per cent. choosing this method of ending existence. Carbolic acid was by far the most favourite poison used. 20 per cent. sought death by shooting, 16 per cent. used illuminating gas for the purpose, while 8 per cent. resorted to hanging.

The Laboratory of the Rockefeller Institute.

The building of the laboratory of the Rockefeller Institute of Medical Research is about to be commenced. The edifice will be placed on Exterior-street, east of Avenue A. It is to be a five-storey building, 136 feet front, with a pilastered façade of limestone and ornamental brick. The upper storeys are to be furnished as general and special laboratories and research rooms and the roof will have houses for the animals. An auditorium hall, library, and study will be on the first floor, while an annex will contain a two-storey building for the animals and a power-house.

August 6th.

Obituary.

SIR WILLIAM MITCHELL BANKS, M.D., LL.D. EDIN., F.R.C.S. ENG.,

CONSULTING SURGEON TO THE LIVERPOOL ROYAL INFIRMARY, AND EMERITUS PROFESSOR OF ANATOMY AT THE UNIVERSITY OF LIVERPOOL.

By the death of Sir William Mitchell Banks, which sad event took place suddenly at Aix-la-Chapelle on August 9th, the medical profession has lost one of its best-known members and Liverpool a very distinguished citizen. The intelligence occasioned profound sorrow among all classes in Liverpool, by whom Sir William Banks was held in the highest regard. Three weeks ago he sought the advice of Sir Dyce Duckworth, who was attending the functions connected with the laying of the foundation stone of the Liverpool Cathedral, and, acting on his suggestion, he started on a trip to Homburg accompanied by his son, Mr. Reginald Banks. When he left home no anxiety was felt with respect to his condition and it was hoped that the change might restore him to his usual robust state of health. It was therefore with no little surprise that the news that he had suddenly passed away at Aix-la-Chapelle was received in Liverpool.

Sir William Banks was the son of the late Mr. Peter S. Banks, solicitor, of Edinburgh, and was born in that city on Nov. 1st, 1842. He was educated at the Edinburgh Academy and early displayed marked aptitude for the profession of which he afterwards became so distinguished a member. He was proud of relating the fact that he was always "dux" of his class at the academy. In 1864 he graduated as M.D. at the University of Edinburgh and carried off the University gold medal for an anatomical thesis on the Wolffian bodies. On leaving Edinburgh he proceeded to Glasgow where he became demonstrator of anatomy under the late Professor Allen Thomson, which post he retained for two years. He went to Liverpool in 1868 as assistant to Mr. E. R. Bickersteth, formerly surgeon to the Liverpool Royal Infirmary and now consulting surgeon and president of that institution. In 1869 he became a Fellow of the Royal College of Surgeons of England. His first appointment at the Liverpool Royal Infirmary was that of pathologist. In 1875 he was appointed assistant surgeon and in 1877 he was elected as surgeon, a position which he retained until Nov. 1st, 1902, when he retired on account of the age limit of 60 years after a service of 27 years. As an expression of its appreciation of his great services to the institution, and especially during the rebuilding in which he took a leading part, the committee placed ten beds at his disposal—a compliment which was highly prized—and elected him a consulting surgeon. Apart from his distinguished professional work, Sir William Banks rendered invaluable assistance to the Royal Infirmary as administrator. Along with the late Dr. Alexander Davidson he represented the medical board on the subcommittee which had charge of the rebuilding of that institution, the foundation stone of which was laid in 1887 by the late Earl of Derby. He was also a member of the medical deputation which visited many continental hospitals for the purpose of studying their plan and equipment and it was on the recommendation of this deputation, which had in the course of its tour gleaned many suggestions of great value, that the new Royal Infirmary was designed. He took an active interest in the organisation of the Liverpool School of Medicine, together with the late Dr. Alexander Davidson, Mr. Reginald Harrison (now of London), Dr. Richard Caton, Mr. Edgar A. Browne, and others. He was a member of the council of the University of Liverpool and in virtue of his being emeritus professor of anatomy he was also a member of the medical faculty of the University. In recognition of his services to surgery and scientific research he was knighted in June, 1899.

Outside the range of his surgical attainments Sir William Banks was interested in various scientific societies and on the formation of the Liverpool Biological Society in 1886 he became its first president. Besides having been president of the Liverpool Medical Institution in 1890-91 he had been president of the Lancashire and Cheshire branch of the British Medical Association. He was at one time a member of the Council of the Royal College of Surgeons of England, vice-president of the Medical Society of London, and the first representative of the Victoria University on the General Medical Council. The University of Edinburgh recognising in him an eminent alumnus admitted him to the honorary degree of LL.D. in 1899—a distinction of which he was particularly proud. In 1892 he was made a justice of the peace for the city of Liverpool. On his retirement from active duties as professor of anatomy at University College, Liverpool, his colleagues and the students of the medical faculty presented him with his portrait painted by the Hon. John Collier. Sir William Banks had a charm of manner which could not fail to make him a universal favourite and it can be truly said that he was loved and respected by all grades of the profession in Liverpool. His influence with the profession and the public was great and when any professional reform in Liverpool needed a strong advocate the universal expression of opinion at the time was that "Banks is the man to do it." As a teacher he was very practical and could impart his knowledge with lucidity. As a colleague he was at all times pleasant and genial and it was felt, when he advocated a certain line of action, that he was thoroughly master of his subject. He was never a prig, he never preached, he never bored. When he took up a subject he generally managed to gain his object. He was never known to excite jealousy. It was generally acknowledged that he thoroughly deserved all the honours which were bestowed upon him.

Sir William Banks was particularly interested in the study of cancer and his judgment as to the necessity of operating or otherwise in that disease was very sound. He delivered the Lettsomian lectures on Cancer of the Breast in 1900.[1] He was very much affected by the death in March last of his oldest friend and colleague, Dr. Alexander Davidson, and seven weeks later the death of another friend and lay colleague, Alderman John Lawrence, whilst on a trip to the Mediterranean, was also a sad blow to him. The trio had been associated for a number of years in the welfare of the Royal Infirmary, of which Alderman Lawrence had been an active manager for upwards of a quarter of a century, and it can be truly said that the Royal Infirmary had no warmer friends than the three deceased gentlemen, all of whom passed away within such a short space of time. During the last few years he devoted a part of his leisure time to the pastime of golf and his familiar figure will be much missed on the Wallasey links, where he was an especial favourite, and of which club he was the captain in 1897. His pretty little bungalow at Wallasey was a pleasant resort in the summer months for his numerous friends, lay as well as medical, and many of his professional brethren are indebted to him for generously placing it at their disposal when he did not require it for his own use. He has left a widow and one son who is a student at Lincoln's Inn.

The funeral took place at Smithdown-road cemetery on August 12th and was more largely attended than any funeral held in Liverpool for many years.

For the following additional details regarding Sir William Banks's career we are indebted to Mr. Reginald Harrison:—

"I have known Sir William Banks from about 1868, when he succeeded me as Mr. Bickersteth's private assistant. We were colleagues at the Liverpool Royal Infirmary and at the School of Medicine (now the medical faculty of the University) till 1889. We were again colleagues on the Council of the Royal College of Surgeons of England. His first important step on coming to Liverpool as a graduate of the University of Edinburgh was to obtain in 1869 the Fellowship of the Royal College of Surgeons of England. For this ordeal he was unusually well prepared, but much to my surprise and his chagrin he informed me on one occasion on returning from an examination at the College that he had been rejected. I cannot recall whether this was at the preliminary examination in arts, which was then required from candidates for the Fellowship, or at the professional part of it. I think it was at the former. However, I remember, having some knowledge of his work and experience as a teacher, that I urged him to interview the late Mr. Trimmer and to seek the grounds for his rejection. It was then discovered that a mistake had been made in sorting the papers and that he had not been rejected; he, in fact, eventually obtained his

[1] THE LANCET, March 10th (p. 684), March 24th (p. 843), and April 7th (p. 930), 1900.

SIR WILLIAM MITCHELL BANKS,
CONSULTING SURGEON TO THE LIVERPOOL ROYAL INFIRMARY AND EMERITUS PROFESSOR OF ANATOMY IN THE UNIVERSITY OF LIVERPOOL.

DR. T. GILBART-SMITH,
PHYSICIAN TO THE LONDON HOSPITAL AND TO THE ROYAL HOSPITAL FOR DISEASES OF THE CHEST.

SIR FREDERIC BATEMAN
CONSULTING PHYSICIAN TO THE NORFOLK AND NORWICH HOSPITAL AND TO THE EASTERN COUNTIES ASYLUM

Fellowship without a hitch. From 16 years' experience on the Council and its committees I should say this incident in the history of the professional examinations of the College was a unique one. Both in the dissecting-room as a demonstrator and subsequently in the anatomical theatre Sir William Banks was seen to great advantage. He spent an immense amount of time in making a most excellent and comprehensive collection of diagrams (many of them quite works of art) and anatomical preparations (of his own dissections) for the instruction of his class. He had a great belief in giving his students not only a discourse but something to look at. He rarely published a surgical paper without introducing one or more original illustrations. He believed in teaching by the eye as well as by the ear concurrently. His dissecting-room aptitude and his method of displaying it proved of great service to him when he became assistant surgeon and subsequently surgeon and lecturer on clinical surgery at the Royal Infirmary. Some of his operations which required in particular accurate and extensive dissection—for instance, the removal of growths and tumours about the neck and the ligature of large arteries in connexion with aneurysms—were models of execution and at the same time demonstrated the breadth and utility of his experience as an anatomist. He was an excellent colleague at the bedside of either a hospital or private patient and never spared himself to help whoever was associated with him in the most loyal and disinterested manner. Like many men of decision he had strong likings and dislikings and did not hesitate to say so even at the risk of giving offence in high quarters. It may be truly said of him that he had the courage of his convictions."

THOMAS GILBART-SMITH, M.A., M.D. DUB., F.R.C.P. LOND.,

PHYSICIAN TO THE LONDON HOSPITAL.

THE death of Dr. T. Gilbart-Smith, which we announced last week, came as a great shock to his many friends. He was in the active practice of his profession and with the exception of the members of his family no one knew that his health gave cause for anxiety. He was enjoying a holiday in Devonshire with one of his sons and whilst bicycling on the evening of August 3rd suddenly fell from his machine and when his son reached him life was found to be extinct. Death was due to angina pectoris, the attack probably having been induced by the effort of mounting his bicycle.

Dr. Gilbart-Smith was born in 1848 and was the son of the Rev. J. Denham Smith of Dublin. He was educated at a school in Shropshire and then proceeded to his medical studies at Trinity College, Dublin, where he graduated in 1869, passing the examination for the Membership of the Royal College of Surgeons of England two years later. He took the degree of M.D. in 1873. He likewise studied at St. Bartholomew's Hospital and at Paris. He was elected a Fellow of the Royal College of Physicians of London in 1885. In 1878 he was appointed assistant physician to the London Hospital, becoming full physician in 1894. In addition to holding this appointment at the time of his death he was physician to the Royal Hospital for Diseases of the Chest, City-road, and consulting physician to the Tottenham Hospital, to the Mildmay Park Cottage Hospital, and to the Cripples' Nursery. He was also chairman of the hospital committee in connexion with the Mission to Deep-sea Fishermen. He was one of the Vice-Presidents of the Medical Society of London—a society in which he had served on the council and as secretary; he was also one of the trustees of the Fothergillian Fund.

Dr. Gilbart-Smith was essentially a clinician. He had gathered his medical knowledge from a close observance of disease as presented in actual practice at the hospitals and elsewhere. He recognised that medicine was not only a science but an art and that to become a successful physician it was necessary to educate the senses in every way possible. He possessed in a high degree the faculty that has been aptly termed "clinical instinct" and so was frequently able to arrive at a correct diagnosis more speedily than one who relied entirely on theory. We may quote Corvisart's observations on the art of medicine as being particularly applicable to Dr. Gilbart-Smith's methods and teaching in clinical work: "The education of the senses is so important, so indispensable, that without it I do not think it possible to be a skilful physician at the bedside of the patient. And what is it, in fact, which is commonly called experience in medicine, which prevails so often over the greatest erudition, the most solid information, but the result of the frequent, methodical, and just exercise of the senses, whence are derived such facility in their application, such readiness of appreciation, such certainty of judgment, sometimes so rapid that all these acts appear to be simultaneous and the aggregate of which are comprehended under the denomination of tact?" Dr. Gilbart-Smith's lectures in class-room or ward all bore the stamp of original thought and practical experience and those who served under him as house physicians or clerks especially benefited by his tuition in practical work. His genial Irish nature and ready wit, combined with his handsome and commanding presence, endeared him to all who knew him. He was ever ready to lend a helping hand or encouraging word to a student or young practitioner just starting on his professional career. Amongst the students he was immensely popular. He took the greatest interest in all the various societies and clubs in connexion with the London Hospital and held office in many of them. In short, in every way he gave cordial support to all that appertains to the social life of the students outside their professional work and thereby greatly assisted the popularity and success of the medical school. His contributions to medical literature were not many, but such papers as he read before the medical and other societies were of a strictly practical type.

Dr. Gilbart-Smith married in 1870 the daughter of Mr. Thomas Bewley of Rockville, co. Dublin, and at once commenced practice in Harley-street, occupying until his death the same house. He leaves a widow and three sons, one of whom is in the medical profession. The esteem in which he was held by his colleagues and friends was demonstrated by the large attendance on the day of his funeral. After a brief service at his house the interment took place at Hampstead Cemetery, the body being borne to the grave by personal friends, who were also representatives of the various hospitals to which he was attached. The service in the cemetery was of the simplest character in accordance with his own wishes. Around the grave were gathered many members of the London Hospital staff and committee and numerous friends belonging to the medical profession who cherished memories of acts of kindness shown to them during his life-time.

SIR FREDERIC BATEMAN, M.D. ABERD., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE NORFOLK AND NORWICH HOSPITAL.

Sir Frederic Bateman of Norwich, who died at his residence in that city on August 10th, had for many years been recognised as one of the foremost representatives of the medical profession in East Anglia. He had attained a great age and the closing scene was of brief duration. On August 8th he attended a meeting of the managers of the Bethel Hospital for the Insane, an institution with which he had been connected for many years, and resigned his position as consulting physician. On the 9th he was out of doors, but in the evening he complained of illness and he passed away in the early hours of the following morning.

Sir Frederic Bateman belonged to a Norwich family and was born in 1824, his father, Mr. John Bateman, being sheriff of the city in 1837. His medical education was received in Paris and at University College, London. He obtained the French medical qualification of Officier de Santé in 1846; in 1849 he was admitted M.R.C.S. Eng., and in 1850 he graduated as M.D. at the University of Aberdeen, also in the same year taking the diploma of L.S.A. In 1851 he was appointed house surgeon to the Norfolk and Norwich Hospital and on retiring from that position he engaged in general practice as a partner of the late Mr. Gibson. In 1864, on the retirement of the late Dr. Ranking, he became physician to the Norfolk and Norwich Hospital, an appointment which he held till 1895. In 1866 he was admitted a Member of the Royal College of Phyiscians of London, and in 1876 he was elected a Fellow. In 1895, after 30 years' service on the staff of the Norfolk and Norwich Hospital, he became consulting physician. He was also consulting physician to the Eastern Counties Asylum for Idiots, to the Jenny Lind

Infirmary for Children, to the Norfolk and Norwich Eye Infirmary, to the Norwich City Asylum, and, as already mentioned, to the Bethel Hospital for the Insane. He was a member of a variety of medical societies, British and foreign, as well as a foreign associate of the French Academy of Medicine. His most important published work was a treatise on Aphasia which gained the Alvarenga prize of the French Academy of Medicine; the first edition, the title of which was "Aphasia, or Loss of Speech, and the Faculty of Articulate Language," appeared in 1870; the second edition, much enlarged, in which the title was changed to "Aphasia and the Localisation of the Faculty of Speech," was issued in 1890. He was also the author of "The Idiot and his Place in Creation," as well as of contributions to THE LANCET and other periodical literature of the profession. He sat in the Norwich town council for the old Third Ward and in 1872 served the office of sheriff, as his father had done before him, fulfilling the duties of the position so well that special reference to his merit in this capacity was made in the votes of thanks awarded to him at the end of his term. During his shrievalty the Social Science Congress was held in Norwich and Sir Frederic Bateman took an active part in the discussions. He read a paper to the members of the Churchman's Club on Darwinism tested by Scientific Researches in Language, declaring himself to be altogether opposed to the theories of the evolutionists. In 1892 he received the honour of knighthood. In 1893 the University of Aberdeen conferred on him the degree of LL.D.

A medical friend of Sir Frederic Bateman has sent us the following details as to some of his personal characteristics:—His special taste was for literary work and his book on "Aphasia" was the labour of the most active years of his life. He had resided in Paris and was thoroughly conversant with French medicine and its literature. He was a great linguist and, in fact, an accomplished scholar in both modern and classical languages. His work shows abundantly how deeply read he was in all that had been written on his subject. In addition to his literary and scientific work he carried on a consulting practice in Norwich and the surrounding district and his services were in requisition particularly as an expert in diseases of the brain. As a colleague he was all that could be desired and his relationship with his brother practitioners was marked by the greatest cordiality. It was felt that with his absorption in literary pursuits he was beyond the reach of any of the petty frictions that sometimes mar inter-professional relations. He was of a most kindly disposition and many of his younger colleagues owe much to his ready help.

In 1855 he married a Miss Gooderson of Norwich who died in 1897. Their surviving family consists of three sons (all of whom are in the medical profession) and two daughters. The funeral took place on August 13th at Norwich Cemetery.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Quarantine Conference.

A CONFERENCE of medical officers from the several States on the subject of future Federal quarantine laws has been held in Melbourne. The members of the conference were Dr. D. A. Gresswell, chairman of the Victoria Board of Public Health, who was subsequently appointed chairman; Dr. J. Ashburton Thompson, chief medical officer, New South Wales State Government; Dr. B. B. Ham, Commissioner for Public Health, Queensland; Mr. T. H. Lovegrove, principal medical officer, Western Australia; Dr. W. Ramsay Smith, chairman, Board of Health, South Australia; and Dr. Elkington, permanent head Department of Public Health, Tasmania. In a brief speech of welcome the Minister of Customs pointed out that the questions upon which he desired the experienced gentlemen before him to give advice were:—1. The advisability of taking over administration of the quarantine laws of the several States. 2. The provisions necessary or desirable to introduce in a Federal Quarantine Bill in regard to (*a*) prevention of the introduction of diseases from abroad, (*b*) the prevention of the dissemination of disease, and (*c*) the quarantine of animals and plants. And 3. Generally in regard to (*a*) method of administration, central staff, &c.; and (*b*) any matter in connexion with which it may seem Commonwealth legislation should deal with. The Cabinet would, however, like advice on all cognate matters which would suggest themselves to the conference. The information was required with as little delay as possible as the Government desired to proceed with a Bill before long. After the conference rose Dr. Gresswell said that it had been decided to issue no progress statements of the proceedings, as its work was only tentative and suggestive. The conference would need to get legal advice as to how far Federal powers extended in quarantine matters and to accummulate information as to machinery already existing in the States. Dr. Gresswell was doubtful whether the conference would draft a complete Federal Bill. The Minister of Customs would be supplied with a full report, and doubtless, as the outcome of the conference, a smaller body would be intrusted with the drafting of a Bill.

Lunacy in Victoria.

The report of the Inspector-General of Hospitals for the Insane in Victoria has been presented to Parliament. On Dec. 31st last there were 4570 persons on the registers, an increase of 23 for the 12 months. Of these 4349 were resident, 184 were on probation with friends, and 37 were under the care of guardians. There were 754 persons admitted during the year, a decrease of 30 as compared with 1902. In addition there were six persons confined in lunacy wards attached to public hospitals. No improvement had been made as regarded the arrangements for night nursing. The necessity for an increased night staff and suitable observation dormitories was emphasised. A trained female nurse had been appointed to the male hospital at the Kew Asylum and a part of the male division at the Beechworth Asylum had been staffed with female nurses. The ratio of persons admitted to the general population was 1 to 1603. The ratio for 1902 was 1 to 1537, and in 1901, 1 to 1596. There was one person registered as insane in the State for every 264 of the general population, as compared with one for 265 for the previous year. The recovery rate was 42·29 per cent., and the relieved rate 6·65. The recovery and relieved rates for 1902 were 43·48 and 6·90 per cent. respectively. The total expenditure of the department was £135,795 2*s.* 6*d.*, a reduction of £2897 0*s.* 11*d.* on the previous year. The actual cost of maintenance of patients was £131,042 15*s.* 3*d.*, and the average weekly cost of patients was 11*s.* 7*d.*, or, deducting the amount received from collections, a net cost of 9*s.* 10½*d.* as against 10*s.* 4¼*d.* for 1902. In conclusion, as this was the last report under the old system before the new Act came into operation, the inspector gave the following list of improvements effected duringthe last few years:—The introduction of trained female nurses, provision of spray baths, separation of the idiots, and imbeciles, provision for female criminal lunatics at Ararat, accommodation for female epileptics at Ballarat, increasing means of employment as a factor in treatment, systematic training of attendants, improvement in the food supply, adoption of observation dormitories with constant night supervision of epileptic and suicidal patients, and improved fire prevention methods.

Hospital Accommodation for Babies in Sydney.

The council of the Woman's Progressive Association of Sydney has collected the following information as to the hospital accommodation available in Sydney for sick infants under two years of age:—

The Sydney Hospital has no separate ward for sick babies or children, and has only eight cots; but the board has proposed plans for providing 16 cots when funds are available. At the Moorcliff branch very young children are treated for eye diseases. The Royal Prince Alfred Hospital has one ward of 16 cots exclusively devoted to the nursing of sick infants who are admitted from the age of a few weeks upwards. When the beds of the new pavilion are being allotted the question of giving further room for infants will be fully considered. St. Vincent's Hospital does not undertake the general treatment of sick infants. Lewisham Hospital receives sick children from 15 months to 14 years; but has not many beds for them and only admits younger babies when an operation is imperative, and then admits them at any age the doctor wishes. The Sydney Benevolent Asylum takes destitute children, sick or well, and at any age. In the new hospital a ward is being set apart for 36 sick children; mothers are also admitted. The Waitara Home receives sick infants at any age and has 12 cots set apart for them. Mothers are asked to remain with their sick babies. The Royal Alexandra Hospital rule for age admission is between 18 months and two years, but in urgent cases young children are taken into the hospital irrespective of age. In answer to suggested provision for sick babies the secretary states: "The suggestions contained in your letter are receiving serious consideration, and if funds will allow it is hoped provision for the reception of young babies will be provided in the new hospital."

The council considered:—

1. That the existing and proposed accommodation was totally

inadequate to stem the appalling infant mortality, which was upwards of 5000 annually.

2. That the contemplated provision was chiefly for infants of 18 months and upwards, whereas the loss of infant life under that age was most disastrous, and discreditably reflected on existing conditions, in regard to humanitarian progress.

3. That infants' homes were only suitable for healthy children; that the death-rate of such institutions was misleading as it was based on sick and healthy children instead of sick babies alone.

4. Finally, that the building of a hospital for sick infants alone was an imperative necessity, with a training-room attached where young girls could be taught the care of infants and nurses could be specially trained in that branch.

July 11th.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen having passed the necessary examination and having conformed to the by-laws and regulations have been admitted Members of the Royal College of Surgeons of England and have received their diplomas:—

Frank Alcock, Owens College, Manchester, and Guy's Hospital; Ernest Francis Rimington Alford, University College Hospital; Harry Reginald Allingham, King's College Hospital; John Aylen, St. George's Hospital; Frederick Barnes, Charles Eastly Bartlett, and Joah Edward Lionel Bates, Guy's Hospital; Lacey Bathurst and John Henry Bletsoe, St. Thomas's Hospital; Hugh George William Beckett and Henry Jeaffreson Brewer, St. Mary's Hospital; Faustin Marcel Boclet, Charing Cross Hospital; John Bowen-Jones, Owens College and Royal Infirmary, Manchester; Francis Arthur Brodribb, St. Thomas's Hospital; Edward Middleton Brown, B.A., B.C. Cantab., and Felix Marshall Bulley, M.A. Cantab., Cambridge University and St. Thomas's Hospital; William Byam, St. George's Hospital; Patrick Duncan MacIver Campbell, St. Mary's Hospital; Thomas Waycott Chaff, St. Bartholomew's Hospital; James Richard Alexander Clark-Hall, St. George's Hospital; Cecil Colmer, London Hospital; George Herbert Colt, B.A., M.B., B.C. Camb., Cambridge University and St. Bartholomew's Hospital; Percival Charles Coombes, Madras University and University College Hospital; Henry Cooper, B.A. Camb., Cambridge University and London Hospital; Walter Francis Corfield, University College Hospital; William Isaac Cumberlidge, B.A. Camb., Cambridge University and St. Bartholomew's Hospital; Frederic William Daniels, London Hospital; William Bradshaw Davy, Middlesex Hospital; Reginald Inglis Douglas, St. Bartholomew's Hospital; Wilfred Ralph Leycester Drawbridge, Durham University and St. Bartholomew's Hospital; Edward Percy Hughes Dudley, University College, Sheffield, and St. Bartholomew's Hospital; Harold Denny Duke, London Hospital; Harold Edward Dyson, University College Hospital; William Square Edmond, St. Bartholomew's Hospital; Nigel Corbet Fletcher, B.A. Camb., Cambridge University and University College Hospital; Trevor Hayman Fowler, St. Bartholomew's Hospital; Harold Frankish, B.A. Oxon., Oxford University and Middlesex Hospital; John Dobie Galloway, L.S.A. Lond., London Hospital; Howard Trevelyan George, B.A. Camb., and Sydney Herbert Gibson, B.A. Camb., Cambridge University and St. Bartholomew's Hospital; Herbert Jennings Gibbs, Madras Medical College and St. Mary's Hospital; Dhanjibhai Ratanjee Gilder, Bombay and Edinburgh Universities and University College Hospital; John Langton Gilks and John Wynn Ford Gillies, St. Thomas's Hospital; Frederick George Goble, Guy's Hospital; Ronald Evelyn Gordon Gray, M.A. Camb., Cambridge University and St. Thomas's Hospital; Major Greenwood, London Hospital; Percy Gully, Charing Cross Hospital; Cuthbert Murray Halsall, University College and Royal Infirmary, Liverpool; John Molyneux Hamill, M.A. Camb., B.Sc. Lond., Cambridge University and St. Bartholomew's Hospital; Robert Oliver Handcock, Yorkshire College and General Infirmary, Leeds; Arthur Edgar Hay, King's College Hospital; Arthur Lewis Heiser and John Warwick Hele, L.D.S. Lond., Middlesex Hospital; Frederick Charles Hepburn, B.A. Camb., Cambridge University and London Hospital; George Wykeham Heron, Westminster Hospital; Ernest Cramer Hughes, B.A. Camb., Cambridge University and Guy's Hospital; Hamilton Irving, Owens College and Royal Infirmary, Manchester; Sidney Dattner Jacobson, M.D. New York, New York University and Guy's Hospital; Tom Jays and Harold Albert Kisch, St. Thomas's Hospital; Henry Hollis Jenkins, Guy's Hospital; Orme Stirling Kellett, Cambridge University and London Hospital; William Ronald Kirkness, King's College Hospital; James Littleton Lawry, London Hospital; Harold Leach, Yorkshire College and General Infirmary, Leeds; Harold Cruickshank Lees, St. Mary's Hospital; George Mackenzie Lester Lester, M.A. Oxon., Oxford University and St. Thomas's Hospital; Thomas Lewis, B.Sc. Lond., University College, Cardiff, and University College Hospital; Ernest George Robert Lithgow, St. Mary's Hospital; John Henry McAllum, Cambridge University and London Hospital; Edgar John Cecil McDonald, L.M. & S. Bombay, Bombay University, St. Thomas's and King's College Hospitals; George Hagarty McLaren, M.D. Tor., Toronto University and University College Hospital; John Borland McVail, London Hospital; Mahmoud Maher, Cairo and Guy's Hospital; Harold Turley Mant, University College Hospital; Philip Jauvrin Marett, Westminster Hospital; William Norman May, Guy's Hospital; Wilfred Ombler Meek, Owens College and Royal Infirmary, Manchester, and St. Thomas's Hospital; Robert Milne, London Hospital; Edward Lawton Moss, St. Thomas's Hospital; Raymond Culver Mott, Cambridge University and London Hospital; Maurice John Mottram, Guy's Hospital; Basil Newman Murphy, L.D.S. Lond., University College and Royal Infirmary, Liverpool; Frank Neal, Toronto University; Hamish Nicol, Westminster Hospital; Sydney Arthur Owen, B.A. Camb., Cambridge University and University College Hospital; George Richard Painton, London Hospital; William Frank Peach, L.D.S. Lond., St. Mary's Hospital; Edward George Perceau, University College Hospital; Edwin Edgar Montague Price, Birmingham University; Thomas Phare Puddicombe, St. Thomas's Hospital; Cecil Edward Reynolds, University College Hospital; Russell Ian Ritchie, M.B., Ch.B. New Zealand, New Zealand University and University College Hospital; Thomas Howard Frederick Roberts and Gerald Charles Frederick Robinson, Guy's Hospital; William Edgar Robertson, M.B. Toronto, Toronto University and University College Hospital; Edward John Henry Rudge, London Hospital; Arthur Philip Salt and Herbert Bulley Scott, St. Bartholomew's Hospital; Thomas Sanders, Cambridge University and King's College Hospital; Sebastian Gilbert Scott, King's College Hospital; Philip Henry Seal, University College Hospital; Alexander Walter Keith Straton, St. Mary's Hospital; Kenji Takaki and Arthur Whitehead-Smith, St. Thomas's Hospital; Hugh Mortimer Thomas, University College, Bristol, and St. Thomas's Hospital; Henry Strawson Turner, King's College Hospital; Mangattu Karujan Varughese, M.B. & C.M. Madras, Madras Medical College, University College, and Middlesex Hospitals; William Thomas Wallace, M.B. Toronto, Toronto University and Middlesex Hospital; Henry Blanchard Walters, London Hospital; Clifford Sidney White, University College Hospital; Harry Theodore Minden Wilson and Kenrick Stanton Wise, St. Bartholomew's Hospital; and Suat Chwan Yin, M.B. Toronto, Toronto University and University College Hospital.

UNIVERSITY OF CAMBRIDGE.—The examiners in tropical medicine and hygiene (Sir Patrick Manson, Major Ronald Ross, and Dr. Nuttall) have issued the following list of successful candidates for the University Diploma in Tropical Medicine and Hygiene:—

A. R. Cleveland, A. R. J. Douglas, G. Elliott, P. N. Gerrard, C. M. Heanley, J. C. B. Statham, C. A. Suvoong, and J. C. Thompson.

FOREIGN UNIVERSITY INTELLIGENCE.—*Amsterdam:* Dr. MacGillavry has been recognised as *privat-docent* of Surgery and Dr. W. M. de Vries as *privat-docent* of Ophthalmology.—*Berlin:* Dr. Erich Hoffmann has been recognised as *privat-docent* of Dermatology and Dr. Max Westenhöffer as *privat-docent* of Pathological Anatomy.—*Cologne (Academy for Practical Medicine):* Dr. Borst of Würzburg has been appointed to the chair of Pathological Anatomy with charge of the Pathological Institute of the Cologne city hospitals.—*Heidelberg:* Dr. Jussuf Bey Ibrahim of Cairo has been recognised as *privat-docent* of Children's Diseases.—*Kiel:* Dr. Robert Rössle has been recognised as *privat-docent* of Pathological Anatomy.—*Lyons:* Dr. Fabre has been appointed to the chair of Clinical Midwifery in place of the late Dr. Fochier.—*Nancy:* Dr. Pierre Parisot has been appointed to the chair of Forensic Medicine in succession to the late Dr. Demange.—*Odessa:* Dr. F. Bukoyemski has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Prague (Bohemian University):* Dr. Franz Procházda has been recognised as *privat-docent* of Internal Medicine.—*Tubingen:* Dr. Wilhelm Specht has been recognised as *privat-docent* of Psychiatry and Dr. Fleischer as *privat-docent* of Ophthalmology.—*Vienna:* Dr. Eiselsberg has for family reasons decided to decline the offer of Professor König's chair in Berlin. Dr. Heinrich Peham has been recognised as *privat-docent* of Midwifery and Gynæcology; Dr. Friedrich Luithlen as *privat-docent* of Dermatology; and Dr. Pick as *privat-docent* of Medical Chemistry.—*Würzburg:* Dr. Mayr has been recognised as *privat-docent* of Internal Medicine.

CORNWALL CONVALESCENT HOME FOR MEN.—The recently issued twelfth annual report of the Cornwall Convalescent Home for Men at Perranporth states that 127 patients were admitted during 1903, against 117 in 1902. The average stay of each case in the home was 23 days, the cost per head being £2 9*s.* 8*d.* This home was founded by Mr. Passmore Edwards and during the last 12 years 1169 convalescent patients have been admitted.

ST. PETERSBURG WATER FILTERS.—The *Novoe Vremya* reports that a committee consisting of medical men and bacteriologists, under the presidency of Mr. A. N. Oppenheim, inspected the town water filters on July 25th and were horrified at what they saw. The filters had not been cleaned for 11 years and they contained such a depth of mud that water passing through it must necessarily be rendered more impure instead of being cleaned. The committee recommends more frequent cleaning and more filters.

UNIVERSITY OF YURIEV.—V. M. Bechtereff, Professor and Academician of the Imperial Military Medical Academy, has been elected honorary member of the Imperial University of Yuriev in acknowledgment of his exceptional scientific services. Professor Bechtereff, says the *Novosti*, is

one of the most noted Russian psychiatrists and nerve pathologists. His professional works are numerous. Some of them have been translated into foreign languages and secured a high reputation for him both in Russia and abroad.

UNIVERSITY OF OXFORD.—The managers have appointed Mr. J. Henderson Smith, B.A. Oxon., M.B. Edin., to the Philip Walker Studentship in Pathology for a period of three years.

RUSSIA AND THE BERLIN CONGRESS IN DERMATOLOGY.—The presidents of several St. Petersburg medical societies will take part in the Berlin International Congress on Dermatology from Dec. 12th to 17th.

MEDICAL MAGISTRATE.—The Lord Chancellor has added the name of Charles Gibson, M.D., of Harrogate to the commission of the peace of that place.

TEIGNMOUTH WATER-SUPPLY.—The official referee at Teignmouth (Devon) has awarded £2000 damages to the district council against the contractor for breach of contract in the construction of a reservoir. It was stated that the man had used inferior concrete and practically disregarded the specifications, with the result that the reservoir was not water-tight.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, AUGUST 11TH.

A Question of Heredity.

Mr. W. W. RUTHERFORD asked the President of the Local Government Board whether his attention had been called to the system of preparation of accounts and returns of Poor-law administrations which made it impossible to obtain statistics of the number of children born of weak-minded, imbecile, or insane mothers in the workhouses and other institutions subject to the supervision of the department, and whether, having regard to the importance of the subject of heredity, he would undertake that instructions should be given to make such alterations in the system that in future information to this effect would be available.—Mr. LONG answered: I am afraid that there are practical difficulties in this matter. Thus there is the question what persons are to be deemed "weak-minded" or "imbecile" and different views on this subject would probably be taken by the officers of different institutions. I will, however, consider whether anything can be done to attain the object which my honourable friend has in view.

The Use of Sulphuric Acid.

Mr. KILBRIDE asked the Chancellor of the Exchequer whether his attention had been called to the results to public health of the use of sulphuric acid in the manufacture of glucose, afterwards resulting in beer poisoning, and whether as sulphuric acid was used in the manufacture of patent spirit from molasses steps would be taken by the Excise authorities or the Local Government Board to prevent this product being sold to the public as genuine whisky.—The CHANCELLOR of the EXCHEQUER said: My attention and that of my advisers have for a long time been directed to this matter. A Royal Commission was appointed in 1901 "to inquire into arsenical poisoning from the consumption of beer and other articles of food and drink" and issued its final report last November. The President of the Local Government Board and myself are considering whether in the public interest any further legal powers should be given to the departments concerned. The Board of Inland Revenue has not under the present law any control over the sale of patent spirits made from molasses which has been inverted by the use of sulphuric acid and I do not anticipate that it will be necessary to give it any such power. There is no evidence that arsenic or other similar poison has been found in patent spirit and I am advised that even if such poison existed in any material such as molasses or malt before distillation it would not be found in the distilled spirit.

Small-pox in Armagh.

Mr. LONSDALE asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that there had been a sudden outbreak of small-pox in the city of Armagh and that the efforts of the local authorities to check the spread of the disease were being hampered by the failure of the Local Government Board to furnish an adequate supply of vaccine lymph; and whether he would take immediate steps to remedy this deficiency.—Mr. WYNDHAM replied: An outbreak of small-pox has occurred at Armagh. There has been no failure on the part of the Local Government Board to send an adequate supply of lymph. The Board forwarded 1500 tubes between August 4th and 8th and will continue to supply as many as may be required.

Sanitary Reorganisation for the Army.

Sir GILBERT PARKER asked the Secretary of State for War whether a scheme of sanitary reorganisation had yet been prepared for the army or proposed by the Medical Advisory Board; if so whether there was included in it the sterilisation of all fluids employed as drinks at manœuvres, on service abroad, and during active service and by what means this sterilisation was to be secured; whether steps had been taken to secure the instruction, practical training, and examination of non-medical officers of all ranks in their respective units or commands in methods of camp sanitation, especially with a view to the prevention of enteric fever, dysentery, and cholera; and whether after such training and examination the comparative responsibility of such non-medical officers for the occurrence of these diseases in their respective commands or units was to be recognised.—Mr. ARNOLD FORSTER said: The Board recommended the appointment of specialist sanitary officers to army corps and commands, and there are 11 of these appointments at home and eight in Egypt and the colonies in addition to the five already existing in India. Instructions regarding the sterilisation of all fluids employed as drinks, which are applicable to manœuvres, services abroad and active service, have been included in the "Manual of Combined Training"; heat, and in some instances filtration, are the means recommended. Lectures are regularly given to the cadets at Sandhurst and Woolwich and a more advanced course in military hygiene is provided for officers at the Staff College. Instructions in hygienic matters are also given by the specialist sanitary officers. The regulations are also being revised in the direction of involving more responsibility upon the non-medical officers in the supervision of sanitary services in barracks and camps.

FRIDAY, AUGUST 12TH.

Royal Commission on Sewage Disposal.

Colonel LEGGE asked the First Lord of the Treasury whether he could say when the final report of the Royal Commission on Sewage Disposal would be expected and why that portion of the report dealing with sewage farms had not yet been published.—Mr. BALFOUR said: Pending the result of further investigations I am informed that it is impossible to say when either the final report of the Royal Commission on Sewage Disposal or the portion of it which deals with the land treatment of sewage will be published.

Vivisection.

Dr. J. G. SHIPMAN asked the Secretary of State for the Home Department what was the total number of inspections of registered places made during the year 1903 by the inspectors appointed under the Cruelty to Animals Act, 1876, in England and Scotland and in Ireland, and how many inspections had been made of each registered place.—Mr. AKERS-DOUGLAS said: The number of visits paid by the inspectors to registered places in England and Scotland was 325, or an average of five visits to each place. Most of the places were visited thrice during the year. I have made inquiries as regards Ireland and am informed that no record has been kept of the visits to registered places in Dublin, but that it is the rule that each registered place in Ireland shall be visited at least twice a year.

BOOKS, ETC., RECEIVED.

APPLETON, SIDNEY, 25, Bedford-street, Covent Garden, W.C.

Adolescence, its Psychology and its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education. By G. Stanley Hall, Ph.D., LL.D., President of Clark University and Professor of Psychology and Pedagogy. Two volumes. Price 31*s.* 6*d.* net.

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.

A Manual of the Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P., Senior Physician to, and Lecturer on Medicine at, Guy's Hospital. Seventh edition. Price 15*s.* net.

CLAY, C. J. AND SONS, Cambridge University Press Warehouse, Ave Maria-lane, E.C.

Handbook to the Natural History of Cambridgeshire. Edited by J. E. Marr, Sc.D., F.R.S., and A. E. Shipley, M.A., F.R.S. Price 4*s.* net.

ERECKSON'S, Effingham House, Arundel-street, Strand, W.C.

The Gold Coast: its Wealth and Health. By Francis Hart, F.A.S., M.A.I.M.E. author of "West Australia in 1895," &c. Latest map. Numerous illustrations. (Annual, 1904.) Price 5*s.* net.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83–89, Great Titchfield-street, Oxford-street, W., and SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.

Eye-strain as a Cause of Headache and Other Neuroses. By Simeon Snell, F.R.C.S. Edin., Ophthalmic Surgeon to the Royal Infirmary, Sheffield; Professor of Ophthalmology, University College, Sheffield. Price 2*s.* 6*d.* net.

STANFORD, EDWARD, 12, 13, and 14, Long-acre, W.C.

British Rainfall, 1903. On the Distribution of Rain over the British Isles during the year 1903, as observed at nearly 4000 stations in Great Britain and Ireland, with articles upon various Branches of Rainfall Work. Compiled by Hugh Robert Mill, D.Sc., LL.D., F.R.S.E., Secretary of the Royal Meteorological Society. Price 10*s.*

STUBER, A. (C. KABITZSCH), Würzburg.

Beiträge zur Klinik der Tuberkulose. Herausgegeben von Dr. Ludolph Brauer, a.o. Professor an der Universität Heidelberg. Band II., Heft 5. (Schluss des II. Bandes.) Einzelpreis, M.3.

UNIONIST GAZETTE ASSOCIATION, State Printers, Somerville, N.J., U.S.A.

Twenty-seventh Annual Report of the Board of Health of the State of New Jersey and Report of the Bureau of Vital Statistics. 1903. Price not stated.

UNIVERSITY CORRESPONDENCE COLLEGE, Burlington House, Cambridge (London Office: 32, Red Lion-square, Holborn, W.C.).

The University Tutorial Series. Matriculation Directory. No. XXXVII., June, 1904. With articles on Text-books. Price 1s. net.

UNIVERSITY PRESS, Cambridge. (C. J. CLAY AND SONS, Ave Maria-lane, E.C., and H. K. LEWIS, Gower-street, W.C.)

Biometrika. A Journal for the Statistical Study of Biological Problems. Edited, in consultation with Francis Galton, by W. F. R. Weldon, Karl Pearson, and C. B. Davenport. Vol. III. Parts II. and III. March and July, 1904 (issued July 30th, 1904). Price 20s. net.

UNWIN, T. FISHER, Paternoster-square, E.C.

Motherhood. By L. Parry Truscott, author of "The Poet and Penelope," "As a Tree Falls," &c. Price not stated.

WHITAKER, J., AND SONS, LIMITED, 12, Warwick-lane, Paternoster-row, E.C.

Classical and Foreign Quotations. Compiled, edited, and told, with their references, translations, and indexes, by W. Francis H. King, M.A., Oxford. Third edition, revised and rewritten. Price 6s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ABRAHAMS, BERTRAM LOUIS, F.R.C.P. Lond., has been appointed Examiner in Physiology to the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England.

GRÜNBAUM, A. S. F., M.D. Cantab., F.R.C.P. Lond., has been appointed Professor of Pathology and Bacteriology at Liverpool University.

MONTGOMERY, ALEXANDER, M.B., B.S. R.U.I., has been appointed Medical Attendant to the Royal Irish Constabulary for the C District of Belfast.

MURRAY, H. L., M.B., B.S. Aberd., has been appointed House Surgeon to the Liverpool Hospital for Women.

NORMAN, A. S., L.R.C.P. Lond., M.R.C.S. Eng., has been appointed Certifying Surgeon under the Factory Act for the Havant District of the county of Southampton.

PERRY, S. HERBERT, M.D. Lond., M.B., Ch.B. Birm., M.R.C.P., has been appointed Assistant Physician to the General Hospital, Birmingham.

RICHARDS, W. HUNTER, M.B., M.S. Durh., M.R.C.S. Eng., has been appointed Honorary Consulting Obstetric Physician to the Fowey (Cornwall) Cottage Hospital.

SMITH, WILLIAM, has been appointed Medical Officer for the Hawkesbury, Alderly, Badminton, and Acton Turville districts by the Chipping Sodbury (Gloucestershire) Board of Guardians.

SOPER, GERALD MORGAN, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer and Public Vaccinator for the Dartmouth and Dittisham Districts by the Totnes (Devon) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Third House Surgeon. Salary £50 per annum, with board and residence.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £150 per annum, with apartments (not board).

CHELTENHAM GENERAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £92 per annum, with board, lodging, and washing.

COUNTY OF LONDON.—Woman Inspector in the Public Health Department under the Midwives Act, 1902. Salary £150, rising to £250.

DOUGLAS, ISLE OF MAN, NOBLE'S GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon, unmarried. Salary £32 per year, with board and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon for six months. Honorarium £25, with board, residence, &c.

EXMINSTER, DEVON COUNTY ASYLUM.—Assistant Medical Officer. Salary £125, rising to £155, with board and lodgings.

GLASGOW, ROYAL HOSPITAL FOR SICK CHILDREN.—Resident House Surgeon. Salary at rate of £50 per annum, with board and laundry. Also Assistant at Dispensary for six months. Salary at rate of £100 per annum.

GREAT YARMOUTH HOSPITAL.—House Surgeon. Salary £90 per annum, with board, lodging, and washing.

HAMPSTEAD GENERAL HOSPITAL.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with rooms, coals, and gas.

LANCASTER ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.

LIMPLEY STOKE, NEAR BATH, OPEN-AIR SANATORIUM FOR CONSUMPTIVES.—Resident Medical Officer. Salary £200 per annum, rising to £300.

LIVERPOOL INFIRMARY FOR CHILDREN.—Assistant House Surgeon for six months. Salary £30, with board and lodging.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board and residence.

MANCHESTER CHILDREN'S HOSPITAL.—Junior Resident Medical Officer, unmarried, for six months. Salary at rate of £80 a year, with board and lodging.

NEWCASTLE-ON-TYNE HOSPITAL FOR SICK CHILDREN.—Resident Medical Officer. Salary £100, with board, lodging, and laundry.

READING, ROYAL BERKSHIRE HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with board, lodging, and washing.

ROTHERHAM HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £110 per annum, with rooms, commons, and washing.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent-garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 a year, with board, lodging, and washing.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary £140 per annum, with board, washing, and residence.

UNIVERSITY OF LONDON.—Scientific Assistant in Pathology. Salary £50 per annum.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Junior House Surgeon. Salary £50 per annum, with board, lodging, washing, and attendance.

WEST LONDON HOSPITAL, Hammersmith-road, W.—One House Physician and three House Surgeons, for six months. Board, lodging, and laundry provided.

WINCHESTER, ROYAL HANTS COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £65 per annum, rising to £75, with board, residence, &c.

Births, Marriages, and Deaths.

BIRTHS.

BISHOP.—On Aug. 14th, at Sterndale, Great George-street, Harrogate, to T. H. Bishop, M.R.C.S., L.R.C.P. Lond., and Mrs. Bishop, of Newcastle-upon-Tyne—a son.

GITTINGS.—On August 10th, at Eardley-crescent, Earl's-court, the wife of Surgeon C. B. Gittings, M.B. Lond., R.N., of a son.

MARRIAGES.

KERR—MILLIGAN.—On August 9th, at East United Free Church, Dunscore, by the Rev. W. J. Street, M.A., United Free Church, Maxwelton, assisted by the Rev. Chas. Stewart, B.D., Cupar-Angus, brother-in-law of the bridegroom, and the Rev. Jas. Pollock, Dunscore, P. Murray Kerr, M.B., to Elizabeth H. S. J. Milligan, daughter of John Milligan, of Merkland, Dumfries.

LORENA—WRAY.—On the 6th August, at St. Saviour's Church, Maida Vale, W., by the Rev. Canon Sayers, A. Charles Lorena, L.R.C.P. & S.E., Sierra Leone Government Railway, to Millicent Edith, daughter of Hugh A. Wray, Esq., Hyderabad, Deccan, India.

DEATH.

STEWART.—On August 16th, 1904, at "Dunmurry," Sneyd Park, near Clifton, Glo's, Hamilton Stewart, Assistant Pa master, R.N. (retired), younger son of James Stewart, B.A., F.R.C.P. Ed.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

STREET NUISANCES.

AT the last meeting of the city council of Manchester Dr. C. G. L. Skinner drew attention to some of the common, and therefore all the more objectionable, nuisances that disgrace our streets. He asked if the watch committee had observed how great and growing was the nuisance from dirty paper blowing about the streets and the danger to the community from broken bottles, principally mineral water bottles. He called the attention of the watch committee to it rather than the sanitary committee because it was a matter needing prevention more than cure. The tradesmen's errand boys are responsible for the greater part of the paper nuisance, and there ought to be some mode of impressing on them that they must not scatter waste paper broadcast. Nowadays there is so much disregard of authority that errand boys respect it no more than they would have feared the "curate" in the *Private Secretary*, when he threatened to give "a good, hard knock." The broken bottle nuisance is a danger that ought to be treated seriously but the by-laws against it are too often a dead letter. Nearly every country lane and open space accessible to the public are dangerous from the same cause.

THE FOUNDER OF "THE LANCET."

Dr. Stanley B. Atkinson, honorary secretary of the Medico-Legal Society, in reading some old articles on Medical Evidence in the Inner Temple library, recently came across the following interesting reference to the founder of THE LANCET in the *Monthly Law Magazine*, vol. viii. (1840), under the heading "The Present State and Conduct of Parties" (i.e., political), and he sends it to us thinking that we may care to add it to the archives of the history of THE LANCET.

> Mr. Wakley has a pretty vituperative manner of his own, even when he does not descend to an imitation of Mr. O'Connell, and a skill at hitting the right nail on the head that is very painful when the head chances to be endowed with a sensorium. To him we leave it to deal with such epithets as "vulgar and unfounded taunts," and "coarse and ludicrous sarcasms"; the coroner for Middlesex is just the man to tame an Edinburgh reviewer; we are content to know how bitterly and pungently the sarcasm applies, even though we have not "the equivocal merit of having invented it."—P. 58.

PRACTICE IN ONTARIO.

To the Editors of THE LANCET.

SIRS,—I am anxious to know if holders of the triple qualification of Scotland are entitled to practise in Ontario. I am told that I should be required to pass the licensing examination of that State before practising there. I understood that any British qualification entitled one to practise in the British Empire.

I am, Sirs, yours faithfully,

August 13th, 1904. L.R.C.P. & S. Edin.

*** Our correspondent will find information about practice in Canada on p. 651 of THE LANCET of Sept. 5th, 1903. In Ontario registration by the council of the College of Physicians and Surgeons of Ontario is necessary for anyone who wishes to practise and it is optional for the council to admit to registration all persons who are duly authorised to practise medicine, surgery, and midwifery in the United Kingdom and Ireland upon terms which the council may deem expedient.—ED. L.

RABBITS AS "SAND-BAGS."

To the Editors of THE LANCET.

SIRS,—A day or two ago I was called to a little boy who had broken his leg chasing rabbits in a harvest field. I found the injured limb comfortably placed between two freshly-killed rabbits which made excellent "sand-bags" and also, as the lady who arranged them truly remarked, tended to keep the limb warm. This treatment might be quoted in support of the efficacy of "a hair of the dog that bit him."

I am, Sirs, yours faithfully,

Silverton, August 16th, 1904. O. CLAYTON-JONES, M.B. Oxon.

THE SPREAD OF SMALL-POX.

A WOMAN named Clara Powell was recently summoned at Lincoln for exposing a child in her charge suffering from small-pox without taking proper precautions to prevent the spread of the disease on July 30th. The deputy town clerk (Mr. T. W. Page) appeared to prosecute on behalf of the sanitary authority. The defendant, he said, was in receipt of relief from the board of guardians for the purpose of supporting a child named George Barty, 12 years of age. On July 30th the sanitary inspector saw the child and found him to be suffering from small-pox in the early stage of the disease. He had the child taken home in the ambulance van and distinctly told the defendant that he was suffering from small-pox and was in no circumstances to be allowed to leave the house. On the evening of the same day, however, the child was found selling matches in the smoke-room of a licensed house. The offence could be made an indictable one but the sanitary authority had proceeded under the Public Health Act, under which the penalty was £5. The defendant admitted the offence and was fined the full penalty of £5, the alternative being to go to prison for a month. 14 days were allowed for payment. This story is a striking example of how careless, ignorant, or wilful people may damage the community for the sake of a few halfpence of profit, and further the futility of relying upon the obedience of such people instead of at once removing the patient to an isolation hospital.

AN APPEAL ON BEHALF OF MISS E. B. PELLATT, L.S.A.

To the Editors of THE LANCET.

SIRS,—May I enlist your kind help in bringing the following facts to the notice of the readers of THE LANCET? Miss E. B. Pellatt, L.S.A., who became qualified in 1893, decided in 1895 to take up the work of a medical missionary. She was a member of the Guild of St. Luke and having studied Arabic at Zanzibar joined the St. Philip's mission at Cape Town under the Society of St. John the Evangelist in 1896. Here she worked until February, 1903, when she was compelled to return to England on account of her health, but hoping to be able to return to work in December. Optic neuritis of both eyes, however, set in and in February of the current year she was completely blind of the right eye and had but little more than perception of light in the left. She is thus shut out from following her profession, her family are unable to help her, and the sphere of work for her gaining a livelihood by her own efforts must be very limited. It is therefore hoped that her professional brothers and sisters will do what they can to help her. Contributions may be sent to Colonel Francis H. Welch, F.R.C.S., 8, Brandram-road, Lee, S.E. The following have already responded to the appeal. I am, Sirs, yours faithfully,

Welbeck-street, W., August 13th, 1904. E. F. DRAKE-BROCKMAN.

	£	s.	d.
Mr. George L. St. George	1	0	0
Dr. Florence Armitage	0	10	6
Dr. Mary Cruikshank	0	10	6
Mrs. Stanley Boyd, M.D.	10	0	0
Dr. E. L. Fleury	1	1	0
Miss M. Beatrice Counsell	0	5	0
Dr. R. Braithwaite	1	1	0
Rev. E. F. Russell	2	0	0
Rev. Dr. and Mrs. F. W. Sutton	3	0	0
Mrs. R. P. Wintle	2	2	0
Rev. H. Guy Latham	1	1	0
Mrs. J. B. Butler	10	0	0
Surgeon W. E. Marshall, R.N.	0	10	6
Lieutenant-General R. W. Lowry	1	1	0
Rev. A. W. Tudball	1	10	0
Dr. J. A. Armitage	1	1	0
Rev. C. H. Norton	1	1	0
Dr. H. E. Symes-Thompson	1	1	0
Mr. George Cowell	1	1	0
Surgeon-Colonel F. H. Welch	2	2	0
Lieutenant-Colonel E. F. Drake-Brockman	1	1	0
Mrs. Wormald	3	0	0
Mr. W. A. Satchell	1	1	0
Dr. J. F. W. Tatham	1	1	0
Mr. J. Wyatt Pratt	2	2	0
Dr. J. Gutch	2	2	0
Dr. T. Morton	5	0	0
Mr. E. H. Addenbrooke	3	3	0

A QUESTION FOR ARGUMENT.

A CORRESPONDENT under the name of "Fairplay" propounds the following hard case:—Dr. S. was a temporary assistant to Dr. B. Dr. B. in order to remove his own bicycle put Dr. S.'s bicycle close to the waiting-room door which was left open. People passing in the street could see the bicycle (Dr. S.'s) which was the best in the town. Dr. S.'s bicycle was stolen on that very day. Has Dr. S. any claim on Dr. B. from whose premises he lost his machine?

We do not suppose that the law would support Dr. S., but Dr. B. might still be held morally liable at any rate for part of the loss.

A METHOD OF REMOVAL OF THE POST-MORTEM ODOUR FROM THE HANDS.

To the Editors of THE LANCET.

SIRS,—Perhaps the following may interest some of your readers. A fortnight ago after performing a post-mortem examination I had occasion to rub my hands with chloroform to remove some rubber plaster and to my surprise found that the unpleasant smell on my hands was completely gone. I have done the same to-day after a post-mortem examination with a like result. I have tried many methods of removing the smell but I have found none so effective as this.

I am, Sirs, yours faithfully,

August 16th, 1904. HEATON C. HOWARD.

*** The method may give rise to transient irritation.—ED. L.

AN INCOME-TAX QUERY.

To the Editors of THE LANCET.

SIRS,—I am an outdoor assistant at a salary of £220 per annum—i.e., I have to pay weekly rent for rooms situated in a village one and a half miles from the house of my principal. His plate is on the gate but otherwise the house is not his. I am now asked to pay income-tax. Before coming here I was an indoor assistant—i.e., living at a branch at £160. I reckon that board and lodging here cost me £60 per annum—i.e., I am no better off than previously, but I had no income-tax to pay before. Am I now liable to be taxed on the £60? My principal no doubt claims abatement on my salary. A brief reply in your correspondence column will oblige.—I am, Sirs, yours faithfully,

August 16th, 1904. A. B. C.

*** Yes, our correspondent must pay.—ED. L.

Sophos.—Without knowing the exact duties assigned to our correspondent's office we are unable to help him very definitely. Probably the authorities consider that the treatment of persons who have

fallen into the harbour is a part of his duties. As to the other case, in all probability the injured party is liable. The whole state of matters as regards payment of medical men called by the police to see patients is most unsatisfactory. In London, at any rate, no compulsion rests on any medical man other than a police surgeon to answer the summons of a constable to see a patient. But the police authorities will generally pay a fee of either 3*s.* 6*d.* or 7*s.* 6*d.*, according as the call is in the day or the night. The same fees have been recovered for similar services in various places in England. But as a rule it may be said that, when any medical man is called to a street accident, if he does not go he is stigmatised as inhuman and if he does go no one is liable for his fee.

Monaco.—Permission to practise in the principality is granted solely by favour of the Prince of Monaco. Our correspondent can make an application through the Consul-General in London, 37, Conduit-street, Bond-street, W.

Calcar.—Probably the filter made by Maignen's "Filtre-Rapide" and "Anti-Calcaire" Company, Limited, of 15, Great Marlborough-street, Regent-street, W., would answer our correspondent's requirements.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (24th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (25th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (27th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (22nd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Treatment of Nephritis.

TUESDAY (23rd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3.30 P.M. Dr. Davis: Demonstration in Medical Wards.

WEDNESDAY (24th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Dunn: Tobacco Amblyopia.

THURSDAY (25th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—4 P.M. Mr. Edwards: Demonstration in Surgical Wards.

FRIDAY (26th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Paget: Surgical Cases.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1904, which was completed with the issue of June 25th, and the Title-page to the Volume, were given in THE LANCET of July 2nd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1904 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Aug. 18th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Aug. 12	30·01	W.	...	123	71	52	57	61	Cloudy
,, 13	30·15	WSW	...	119	74	54	56	62	Fine
,, 14	29·83	S.W.	0·03	114	72	59	58	64	Cloudy
,, 15	29·72	W.	0·01	120	72	59	58	64	Stormy
,, 16	30·12	W.	0·07	117	70	55	55	59	Overcast
,, 17	29·86	S.W.	0·22	79	79	57	57	58	Raining
,, 18	29·78	N.W.	...	107	63	54	54	58	Clear

During the week marked copies of the following newspapers have been received:—*Aberdeen Daily Journal, Aberdeen Free Press (Weekly), Westminster Gazette, Carlisle Journal, Dublin Evening Mail, Daily News, Surrey Advertiser, Bristol Mercury, Dublin Express, Morning Post, Sanitary Record, Local Government Chronicle, Mining Journal, Hertfordshire Mercury, Army and Navy Gazette, Yorkshire Daily Observer, &c.*

Communications, Letters, &c., have been received from—

A.—Mr. E. Arnold, Lond.; Dr. Stanley B. Atkinson, Lond.; Mr. J. Astier, Asnières; Anderson's College Medical School, Glasgow; A. A. B.; Messrs. Allen and Hanburys, Lond.

B.—Mr. Walter Burns, Belfast; Mr. J. W. Benson, Lond.; Dr. Ralph Browne, Bournemouth; Messrs. Burroughs, Wellcome, and Co., Lond.; T. B. Browne, Ltd., Lond.; Dr. W. C. Brown, Lond.; Mr. C. L. Belford, Lond.

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F.—Major G. H. Fink, Lond.; Mr. Maurice Faure, Lamoulu; Dr. A. Mearns Fraser, Portsmouth; F. T. P.; Faulkner's Calf Vaccine Institution, Lond.

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U.—University College, Lond., Dean of the Faculty of Medicine of; University of London, Secretary to the Finance Committee of; University College, Dundee, Dean of.

W.—Mr. T. Winstanley, Beverley; Mr. Thomas M. Watt, Goxhill; Messrs. O. Wallis and Co., Lond.; Dr. F. R. Walters, Farnham; Mr. A. C. W. Wheatley, Lond.; Messrs. Williams and Norgate, Lond.; Messrs. A. J. Wilson and Co., Lond.; Mr. D. M. Weigel, Lond.; Wyleys, Ltd., Coventry; Messrs. H. Wilson and Son, Lond.; Mr. J. G. Wilson, Durham.

Letters, each with enclosure, are also acknowledged from—

A.—A. J. L.; A. E. G.; A. D.; Anglo-American and Continental Pharmaceutical Co., Croydon.

B.—Mr. A. A. Bradburne, Ryde; Mr. H. Brice, Exeter; Mr. T. Bell, Lancaster; Mr. J. E. L. Bates, Lond.; Mr. W. Berry, Wigan; Staff-Surgeon A. O. Bobardt, Sydney.

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T.—Mr. W. P. Tate, Downpatrick; Mr. J. Thin, Edinburgh; T. H.; T. M. P.; Mr. T. Thatcher, Bristol.

V.—Mr. J. T. Vulliamy, Rugby; Dr. G. R. Vicars, Wood Dalling; V. N. B.

W.—Mr. R. Walker, Aberdeen; Mr. Wilks, Shortlands; Messrs. W. J. Wilcox and Co., Lond.; West Herts Infirmary, Hemel Hempstead, Secretary of; Mr. F. A. Wagstaff, Saffron Walden; Mr. W. F. A. Walker, Dinas Mawddwy; W. D.; W. F. G.; Messrs. Wookey and Sons, Leixlip; Dr. R. Wise, Lond.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France J. ASTIER, 31, Rue Bapte, Asnières Paris.